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April 13, 2018

Mr. Richard Doucette  
Environmental Program Manager  
Federal Aviation Administration  
1200 District Avenue  
Burlington MA 01803

**Re: Hanscom Field Aviation Facility Improvement Project Environmental Assessment**

Dear Mr. Doucette,

On behalf of the Massachusetts Port Authority (Massport), we are pleased to submit an **Environmental Assessment (EA)** for the **Hanscom Field Aviation Facility Improvement Project** for public review in accordance with the *National Environmental Policy Act* (NEPA) regulations. This document responds to all of the Federal Aviation Administration (FAA) requirements for preparation of an EA under NEPA.

In response to a growing demand in general aviation, particularly by corporate jets at L.G. Hanscom Field (Hanscom Field, or Hanscom), along with a lack of available hangar and apron space, the Massport has identified two areas for the future development of additional general aviation and corporate facilities. The first development area is along the north side of the airfield (North Airfield Area). This planned development area would consist of two seven-acre parcels, together anticipated to accommodate construction of up to 165,000 square feet (sf) of new or replacement hangar space. It is expected that some or all of this hangar space could be used by aircraft already operating at Hanscom Field but not able to be based there due to lack of suitable space. To facilitate the hangar construction in the North Airfield Area by others, Massport proposes to construct a new taxiway connecting this area to the existing airfield taxiway system.

The second potential aviation development site area is along the western edge of the airfield and known as the Pine Hill Area. This parcel, which currently supports three T-Hangar buildings (Buildings 37, 38, & 39) for small aircraft, is being considered for redevelopment of approximately 60,000 square feet of new hangar by others. To accommodate redevelopment of the Pine Hill Area by others, the three existing T-Hangar buildings would be demolished and then replaced by approximately 55,000 sf of T-Hangar space in the North Airfield Area.

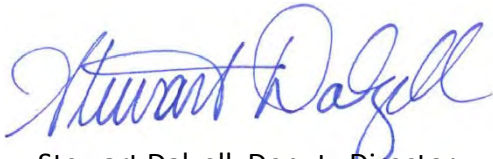
Massport considered various forms of aviation redevelopment in both of these areas in the *2000 Environmental Status and Planning Report (ESPR)*. These concepts were evolved for the *2005 ESPR* and the *2012 ESPR* further updated development options for the North Airfield Area as part of master planning concepts for the Year 2020. The *2012 ESPR* evaluated potential operational and environmental impacts of overall growth at Hanscom, and provides extensive context for redevelopment of these two areas of Hanscom Field, both of which are in current aviation use or have accommodated aviation or other uses in the past. Activity levels associated with the concepts evaluated in this EA are below those already studied in the 2012 ESPR

The 30-day public comment period for the EA will begin on April 19, 2018 and end on May 21, 2018. All parties on the distribution list will be sent a copy of the EA or a notice of availability. The EA will be presented at the April 24th meeting of the Hanscom Field Advisory Commission (HFAC). The EA will be available for inspection at Hanscom Field, local libraries and Town Halls (as shown on the EA distribution list) and on Massport's website (<http://www.massport.com/massport/about-massport/project-environmental-filings/hanscom-field/>).

We look forward to your review of this document and to close consultation with you in the coming weeks. Please feel free to contact me at (617) 568-3524 or Michael Gove at (617) 568-3546, if you have any questions.

Sincerely,

**Massachusetts Port Authority**



Stewart Dalzell, Deputy Director,  
Environmental Planning & Permitting

Cc: S. Williams, A. Goodspeed, F. Leo, J. Carli, M. Gove/Massport  
D. Hewett, A. Jacobs/Epsilon Associates

FEDERAL AVIATION ADMINISTRATION  
DRAFT ENVIRONMENTAL ASSESSMENT

**L.G. Hanscom Field,  
Aviation Facility Improvements Project**

Bedford, Massachusetts

Prepared by:

**Massachusetts Port Authority and Epsilon Associates, Inc.**

April 13, 2018

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## Section 1.0

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### Introduction

## 1.0 INTRODUCTION

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### 1.1 Project Overview

In response to a growing demand in general aviation, particularly by corporate jets at L.G. apron space, the Massachusetts Port Authority (Massport) has identified two areas for the future development of additional general aviation and corporate facilities.

The first planned development area is within the north side of the airfield (called the North Airfield or North Airfield Area). This planned development area would consist of two seven acre sections of the planning area, together anticipated to accommodate construction of up to 165,000 square feet (sf) of new hangar space able for approximately 10 to 12 new aircraft and 38 relocated aircraft. To facilitate the hangar construction in the North Airfield Area by others, Massport proposes to construct a new taxiway.

The second potential aviation development area is in the western portion of the airfield called the Pine Hill Area. This location is planned for approximately 60,000 square feet of hangar development. To accommodate redevelopment of the Pine Hill Area by others, the three existing T-Hangar buildings (Buildings 37, 38, & 39) would be demolished and then replaced by approximately 55,000 sf of T-Hangar space at a new location in the North Airfield Area.

Massport identified these future aviation development sites initially in the *2005 Environmental Status and Planning Report* (ESPR) and in more detail in the 2012 ESPR as part of the Master Planning Concepts for the Year 2020, and evaluated potential impacts. The 2012 ESPR provides extensive context for redevelopment of these two areas of Hanscom Field, both of which are in current aviation use and have accommodated aviation uses in the past.

Environmental review of Hanscom Field activities is undertaken both on an individual project basis as well as at the airport-wide level through Massport's preparation of the *Environmental Status and Planning Report* (ESPR). The ESPR process provides a public forum to assess the cumulative environmental effects of airport operations and informs Massport and the community regarding the implications of those environmental effects. ESPRs present an overview of the operational environment and planning for future improvements at Hanscom Field and provide long-range projections of environmental conditions against which the effects of individual projects can be compared. The ESPR allows the reviewer to see historical environmental information, current information, and potential future environmental effects at Hanscom Field based on a range of future scenarios. Consistent with that intent, the 2012 ESPR provides the broader cumulative context for review of the Proposed Action in this Environmental Assessment.

As described in the 2012 ESPR [<http://www.massport.com/massport/about-massport/project-environmental-filings/hanscom-field/>], Massport has previously evaluated both Airfield areas and has conducted extensive operational and environmental analysis of various future

operating scenarios. As described in Section 4.2, the 2012 ESPR evaluated the potential environmental effects of increased Hanscom aircraft operations for years 2020 and 2030; both analysis scenarios considered activity levels well above those associated with these planned hangar additions. As part of those analyses, future noise, air quality and ground access conditions were projected and compared to past and current environmental conditions. In all cases, the 2012 ESPR considered much higher levels of activity than would likely be associated with the planned hangar developments considered in the Environmental Assessment (EA).

Concurrent with this environmental review process, Massport is advancing a Request for Public Solicitation to third-party developers to construct and operate new hangars with associated parking, aprons and ramps for both of these locations. Construction of additional corporate hangar facilities evaluated in the EA is consistent with the operational and environmental analyses presented in the 2012 ESPR.

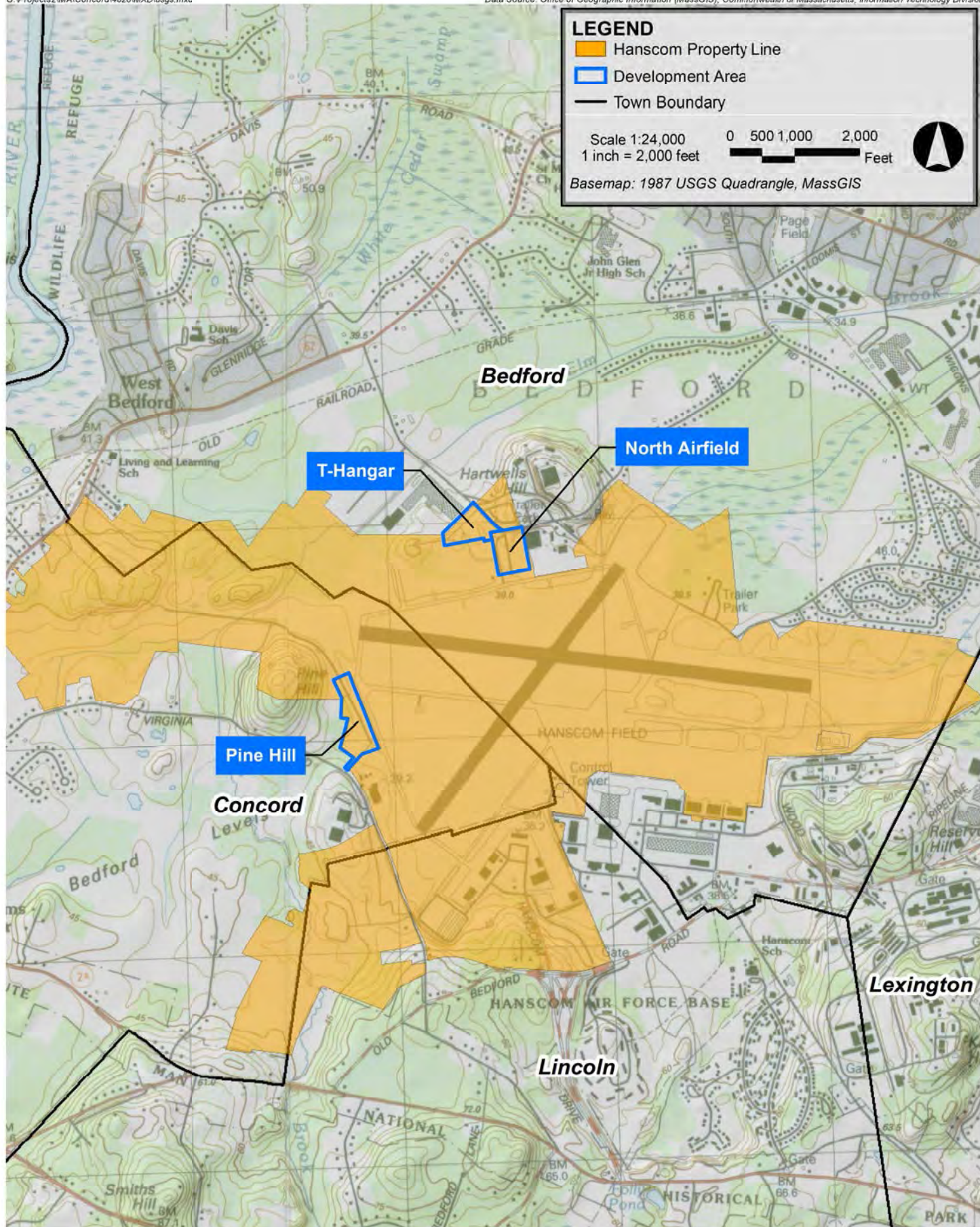
## **1.2 Project Location**

Hanscom Field is comprised of 1,300 acres located in Bedford, Concord, Lexington and Lincoln, Massachusetts (See Figures 1-1 and 1-2). Hanscom is a full-service general aviation airport with convenient access to Eastern Massachusetts. Located about 20 miles northwest of Boston, Hanscom Field plays a critical role as a corporate reliever for Boston Logan International Airport. . In 1941, the Commonwealth of Massachusetts purchased land northwest of Boston to build “Laurence G. Hanscom Field, Boston Auxiliary Airport at Bedford”. Control of Hanscom Field passed to a number of different agencies until 1956, when the legislature placed Hanscom Field under Massport’s jurisdiction. Although the land was always controlled by the state, the airfield was leased and maintained by the military until 1974.

Since managed Hanscom Field as a regional general aviation facility, whose major users are a mix of corporate aviation, recreational pilots, flight schools, as well as some charters and light cargo. Hanscom Air Force Base is located directly adjacent to Hanscom Field and continues to serve as part of the Air Force Life Cycle Management Center.

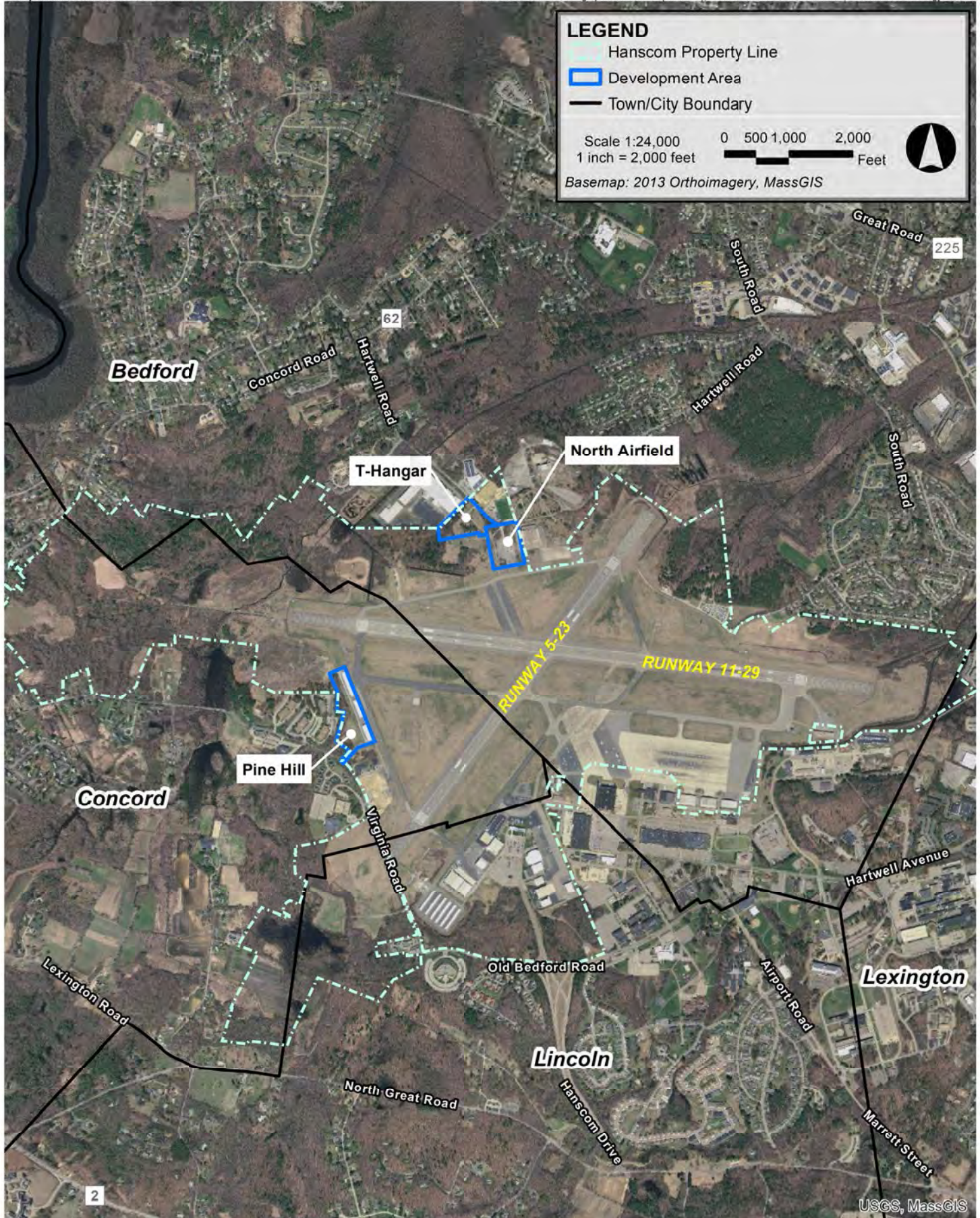
Land uses adjacent to Hanscom Field include residential, commercial, and protected open space (Minute Man National Historic Park and Great Meadows National Wildlife Refuge). Hanscom Field, along with the aviation-related businesses and facilities, is a vital and significant regional transportation and economic asset. The proposed hangar construction project areas are located in two separate areas of Hanscom Field: Pine Hill Area and North Airfield Area; both areas have been previously developed/altered. Please see Sections 3.3 and 4.1 for a detailed discussion of these areas.





Hanscom Field Environmental Assessment Bedford and Concord, Massachusetts





# Hanscom Field Environmental Assessment Bedford and Concord, Massachusetts



In addition to its many aviation-related benefits, the airport also supports local businesses and industries, provides support to adjacent military facilities, supports tourism, as well as encourages additional business development and expansion for cities and towns throughout the Boston Metropolitan Region. This fact was demonstrated in the Massachusetts Department of Transportation (MassDOT) – Aeronautics Division’s 2014 Airport Economic Impact Study Update, which quantified the total aviation and non-aviation related impact of the Hanscom Field (exclusive of military aviation activity) at 1,745 jobs, and a total annual economic output of \$348 million in direct and indirect economic activity.

### **1.3 National Environmental Policy Act (NEPA)**

The National Environmental Policy Act (NEPA, Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982) provides an interdisciplinary framework to ensure that federal agency decision-makers consider all environmental effects of a project and the best measures to avoid, minimize and mitigate unavoidable impacts. To address NEPA in airport development, the Federal Aviation Administration (FAA) issued Order 1050.1F, Environmental Impacts: Policies and Procedures, and FAA Order 5050.4b, National Environmental Policy Act Implementing Instructions for Airport Actions. These documents identify three project categories: Actions which are Categorical Excluded (CatEx); Actions requiring an Environmental Assessment (EA); and Actions requiring an Environmental Impact Statement (EIS).

### **1.4 Environmental Assessment Requirement**

The FAA protocols and procedures for implementing NEPA and addressing the requirements set in the Council on Environmental Quality regulations (40 CFR Parts 1500-1508, 1978) at airports have outlined airport-specific development actions and the required permitting for each.

The proposed redevelopment requires review under NEPA by the FAA. Because Hanscom receives federal funding and is part of the national airspace system, it is a federally-obligated airport and therefore, the FAA must approve revisions to its approved Airport Layout Plans (ALP). Based on initial review of the planning concepts, FAA has indicated that preparation of an EA is the appropriate NEPA review process for the ALP revisions.

The Council on Environmental Quality (CEQ) states that an EA is a “concise document” that takes a “hard look” at expected environmental effects of a proposed action. In this instance, the proposed federal action includes FAA approval of the proposed revisions to the approved ALP for L.G. Hanscom Field.

## 1.5 Federal, State and Local Agency Jurisdiction

Based on the Proposed Action for the development of new hangars, Massport will be required to obtain the federal, state, and local permits identified in Table 1-1. Table 1-1 also identifies the agency responsible for issuing the permit, and the standards with which the Proposed Action must comply.

Massport has considered whether the Proposed Action will be subject to review under the Massachusetts Environmental Policy Act (MEPA) and its implementing regulations (301 CMR 11.00 et seq.) Massport has consulted with the MEPA office and has confirmed that the planned redevelopment does not exceed any of the MEPA thresholds at 301 CMR 11.03 and therefore is not subject to MEPA review.

**Table 1-1 Permits and Approvals Required for the Proposed Action**

| Permit   | Agency   | Measures to Comply with Applicable Performance Standards   |
|--|--|--|
| <b>Federal</b>   |  |  |
| Coverage under National Pollutant Discharge Elimination System (NPDES) Construction Activities Permit        | Environmental Protection Agency                                | Stormwater Pollution Prevention Plan to be developed and implemented, involving series of construction BMPs to reduce potential for erosion and sedimentation                    |
| Coverage under Draft TMDL for Stormwater Pollution   | Massachusetts Department of Environmental Protection (MassDEP) | No increase in peak runoff in post-construction stormwater management due to Total Maximum Daily Loads established for the Shawsheen River and Elm Brook.                        |
| Federal Aviation Administration (FAA) planning, design, and safety Standards: AC 150/5300-13A Airport Design | Federal Aviation Administration (FAA)                          | The proposed taxilane will be designed to comply with FAA design requirements; new buildings will comply with Part 77 standards.   |
| Section 7 Consultation under U.S. Endangered Species Act   | Department of Interior, U.S. Fish and Wildlife Service (USFWS) | The airport is located within the so-called White Nose Syndrome Buffer Zone of the Northern Long Eared Bat. Any required tree removal will be evaluated for review by the USFWS. |



## Section 2.0

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### Purpose and Need

## 2.0 PURPOSE AND NEED

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### 2.1 Overview

As described in Section 1.4, the FAA must approve proposed changes to Hanscom's ALP. This approval constitutes a federal action requiring NEPA review and clearance. The purpose and need for a project is a key element of the NEPA review. It explains the reason for the action and what the agency expects to achieve. Further, it provides the basis for evaluating the effectiveness of the alternatives, *i.e.* how best each alternative achieves the purpose of the project by addressing the documented needs.

### 2.2 Purpose and Need

The purpose of the project is to meet both current demand and the anticipated increased demand that is likely to result from continued strong growth in the business aviation sector in the coming years.

Hanscom Field currently accommodates three fixed base operators (FBOs): Signature Flight Support, Jet Aviation of America, and Rectrix Aerodrome Centers. FBOs provide a range of aeronautical support services including fueling, hangaring, maintenance and some passenger services. All three FBOs have reported to Massport that they are currently operating over capacity and have been forced to place customers seeking hangar space for their aircraft on waiting lists. In addition, Massport also has existing customers that desire permanent hangar space that they are currently unable to accommodate.

Further supporting the need for the project is the trend in business aviation at Hanscom. As illustrated in the annual State of Hanscom reports [<http://www.massport.com/hanscom-field/about-hanscom/publications-reporting/>], although overall operations continue to decline, business aviation has been the fastest growing segment of activity at Hanscom Field, increasing from 20,242 operations in 2000 to 26,119 in 2016. As a result of the growth in these operations and Hanscom's role as the principal airport for the Boston region's corporate and business aviation needs, additional hangar space is needed to securely house these business jets. In addition, the existing tenants and other businesses have expressed interest in developing new hangars at Hanscom for their business jets.

Thus there is a need to provide additional and or private hangar space to accommodate both existing and anticipated future demand for space, particularly to service business aviation needs. Additionally, increased hangar space may potentially reduce the number of ferrying flights that currently take place due to limited hangar space. As further discussed in Section 4.2, increased operations occur when business aircraft that would otherwise be based at Hanscom Field are instead forced to arrive at Hanscom to drop off or pick up passengers and depart to wait at another facility overnight prior to returning to Hanscom for their passengers. This ferrying effect that results from the lack of hangar space at Hanscom essentially creates four trips with two empty legs, when only two trips would be required, were there sufficient

hangar space to accommodate demand. Massport proposes to redevelop two areas and make them available for hangar construction. All aspects of the project discussed herein considered avoiding and minimizing impacts and reuse of previously developed areas. The first area is approximately 15 acres in the North Airfield Area development area (labeled North Airfield Area on Figure 1-2). The second area consists of approximately 10 acres in the Pine Hill development area (labeled Pine Hill Area on Figure 1-2). Redevelopment of the Pine Hill Area will require the demolition of three existing T-Hangar buildings on the site. Massport proposes to replace these T-Hangars in the North Airfield Area adjacent to the proposed hangar construction site. The existing T-Hangars cannot efficiently or cost-effectively be relocated due to age and structural limitations. New apron space will be added in association with the hangar construction in order to provide areas for the aircraft using the new hangars to maneuver, load, unload, fuel and park temporarily.

## **2.3 Public Involvement**

As part of Massport's environmental review process for each project, public outreach is undertaken to seek input from the community, interested parties and local, state and federal agencies. This effort will continue through permitting of the Pine Hill and North Airfield areas. This Draft EA, along with other key regulatory filings, will be posted on Massport's website at <http://www.massport.com/massport/about-massport/project-environmental-filings/hanscom-field/>. Please see Section 7.0 of this document for a circulation list.

Massport has discussed this project in the public Hanscom Field Advisory Commission (HFAC) meetings on a monthly basis starting in January 2017 and the projects will remain on upcoming agendas for public comment following publication of this Draft EA.

Following public notice of this EA, there will be a 30-day public comment period. Within that comment period, a public meeting will be scheduled on the project and Draft EA.

## Section 3.0

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### Proposed Action and Alternatives

## 3.0 PROPOSED ACTION AND ALTERNATIVES

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### 3.1 Proposed Action

As described below, in an effort to respond to demand for corporate hangar space, Massport plans to offer two development areas at Hanscom Field for redevelopment. It is anticipated that Massport would be constructing the replacement T-Hangars and the North Airfield taxiway. Construction of new hangars and associated apron and parking areas would be by developers in response to a pending Request for Public Solicitation.

#### **3.1.1        *Pine Hill Area***

The Pine Hill Area is located on the western side of the airfield, proximate to Taxiway M and Virginia Road, in Concord (see Figure 3-1). To accommodate site redevelopment, Massport proposes to replace the three existing Pine Hill Area T-hangar buildings (Buildings 37, 38, & 39), comprising 55,000 sf of hangar space, on the northern side of the airfield between Taxiway R and the Hartwell Road entrance in Bedford (see Section 3.1.2 below).

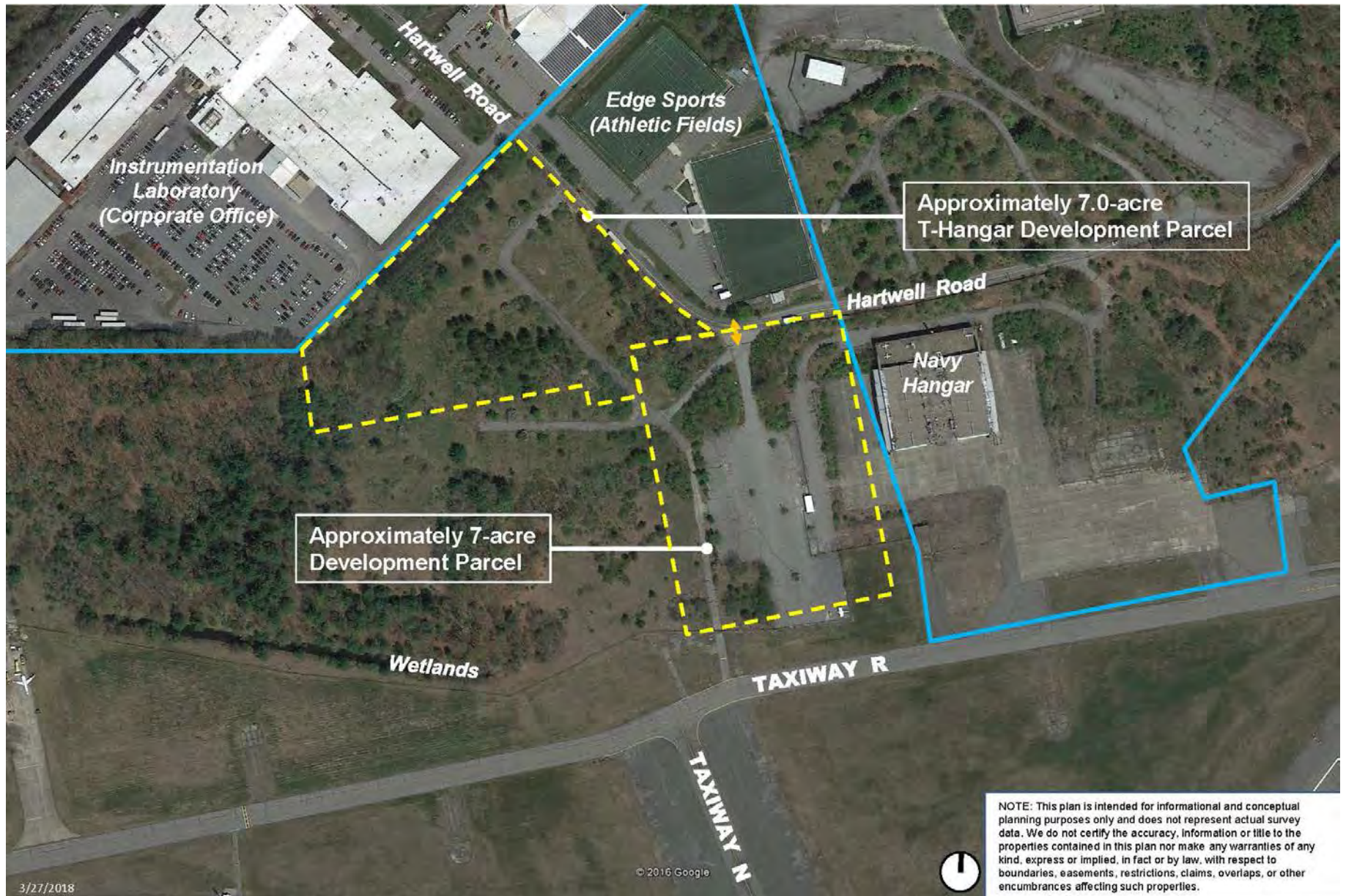
A new commercial aviation hangar of approximately 60,000 sf and approximately 160,000 sf of new apron space would be constructed along Taxiway M. Some administrative and support space would also be required in addition to the 60,000 sf hangar space. The new hangar would be set back from Taxiway M to allow for apron space to be added along the easterly side. Vehicle parking would be located in the rear of the hangar with access from an existing gate off Virginia Road. All work is planned to be constructed outside of wetlands or the associated 100-foot state Wetlands Protection Act buffer zone. To the maximum extent feasible, existing impervious surface area will be redeveloped. The existing stormwater management system would be replaced and upgraded in compliance with Massport's stormwater management policy and MassDEP's Stormwater Management Standards to ensure that all standards are met (see Sections 4.3.10 and 5.11).

#### **3.1.2        *North Airfield Area***

The North Airfield Area is located on the northern side of Hanscom Field, north of Taxiway R, and consists of approximately 15 acres which can support roughly 165,000 sf of hangar space as previously identified in the 2012 ESPR (see Figure 3-2), however, depending on the final design of the Proposed Action, the North Airfield Area may be able to support larger development at a future date. This potential will be further evaluated in the next ESPR. The North Airfield Area has been separated into two designated development areas. The first development area of approximately seven acres will accommodate replacement of the three Pine Hill Area T-hangars in two or three buildings comprising approximately 55,000 sf of hangar space. A designated apron area and a 20-space parking lot accessible from Hartwell Road would also be constructed.







The second redevelopment area at the North Airfield Area (approximately seven acres) is proposed to be redeveloped into approximately 110,000 sf of hangar space for development use. As with the planned redevelopment at the Pine Hill Area, the additional corporate hangars in the North Airfield Area would also have some additional administrative/support space. A portion of the new construction would be in a paved area that was formerly used for parking. An additional 100,000 sf of associated apron space as well as vehicle parking would also be constructed.

To provide access to the airfield, a new taxilane is proposed (approximately 900-feet long by 50-feet wide) to be constructed between the T-hangar units and the new hangar sites, and extending southward to Taxiway R, totaling approximately one acre of disturbance. In compliance with FAA Advisory Circular 150/5300-13A, Massport proposes a slight curve in the taxilane in order to create an indirect connection from the taxilane to the runway via Taxiway R.

Construction in this area will be completed outside wetlands and the associated 100-foot state buffer zone and in accordance with the National Pollution Discharge Elimination System (NPDES) Construction General Permit (CGP). The site does not currently have a stormwater management system. A new system will be installed, designed to meet or exceed Massport's stormwater management policy and MassDEP's Stormwater Management Standards to ensure that any increase in impervious surfaces on these redevelopment does not increase peak runoff rates and meet infiltration requirements. Similar to Jet Aviation's recent project at Hanscom to build a new FBO facility, increases in impervious surface in these two redevelopment sites have or will be offset by removal of impervious surface elsewhere on the airfield. Please see Sections 4.3.10 and 5.11 for further discussion on existing and proposed stormwater management. In anticipation of this future development, in the summer of 2017, Massport removed nearly 10-acres of excess airfield pavement including areas in proximity to the proposed redevelopment. As part of upcoming project construction, Massport expects to remove additional excess airfield pavement.

### **3.2 Sustainable Design**

Massport will require that the selected developer of each area meet Massport's *Sustainable Design Standards and Guidelines, Volume 2*, (2011a) as well as the requirements of the *Massport Guide to Tenant Construction* (2009). These documents are components of Massport's overall sustainability program, which include diverse sustainability initiatives ranging from facilities maintenance to innovative partnerships and public incentives. The Standards apply to new construction projects such as this one, and are intended to be used by architects, engineers, and planners working on tenant alterations on Massport property. Furthermore, the Standards require that new buildings are designed and constructed in accordance with LEED (Leadership in Energy and Environmental Design) Silver certification standards.



### 3.3 Alternatives

As part of the planning process, and consistent with the aviation scenarios presented in Section 3.4 of the 2012 ESPR and the planning assumptions discussion in Section 4.5 of the 2012 ESPR, alternatives were evaluated for airfield development to provide sufficient facilities to accommodate the current aviation demand. The alternatives are also intended to satisfy the subsequent facility requirements, meet applicable FAA design standards, and provide methods to meet local constraints and address community concerns. Figures 3-3 through 3-6 depict the alternatives that were considered. The alternative layouts described herein primarily considered hangar spaces of 60,000 sf for the Pine Hill Area and 110,000 sf for the North Airfield Area (exclusive of the T-hangars), in accordance with the 2012 ESPR's identification for the need of approximately 170,000 sf of new hangar development for the year 2020, associated apron space and vehicle parking areas, along with access to the airfield via taxiway or taxilane.

#### 3.3.1 *Pine Hill Area*

Both Pine Hill Area alternatives propose a 60,000 sf hangar that would be accessed via the existing roadway and access control gate at Virginia Road. The area is adjacent to the Middlesex Green Office Parking Area to the west, a small residential neighborhood to the southwest along Fuller Lane, Taxiway M to the east, and Building 25 owned by Massport and currently leased to the United States Air Force. The Pine Hill Area is approximately 10.3 acres and contains three T-hangar buildings (buildings 37, 38, 39) totaling approximately 55,000 sf, associated paved apron area, and a paved parking area for approximately 17 vehicles. The buildings contain 38 units which can accommodate piston engine aircraft and helicopters. This area is being considered for a new hangar; this would require demolishing existing T-hangar buildings 37, 38, and 39. Under this scenario, there would be an in-kind replacement of the T-hangar units in two or three buildings in the North Airfield Area of Hanscom Field. In addition to no-action, two new hangar layout alternatives for the Pine Hill Area were considered.

##### 3.3.1.1 **No Action Alternative**

This alternative would not relocate the T-hangars and no additional corporate hangar space would be constructed. No additional ramp or apron space would be available for development use either. Since this alternative does not meet the purpose and need of meeting demand for additional hangar space, nor reduce unnecessary aircraft ferrying, this alternative was not selected.

##### 3.3.1.2 **Alternative 1 – Expanded Ramp**

The Pine Hill Area Alternative 1 considered one vehicular parking area, aircraft parking area/ramp, as well as one 60,000 sf Hangar (See Figure 3-3). The layout of the Hangar close to Virginia Road would help to minimize the development impacts further to the north and

west of the area because it eliminates the need for an access roadway further into the area. This alternative would require the alteration of approximately 3,700 sf of vegetated wetlands and additional buffer zone area due to the Hangar's layout near the existing vehicle parking area.

#### **3.3.1.3      Alternative 2 - New Hangar and Ramp (Proposed Action)**

The Pine Hill Area Alternative 2 considered a 60,000 sf hangar with two vehicular parking areas, each with approximately 30 vehicles (Figure 3-4). The lots would be at both ends of the proposed hangar and aircraft ramp and parking area. Construction of a new roadway connection from the existing access at Virginia Road would be required to access the hangar and adjacent vehicle parking areas. Alternative 2 minimizes environmental impacts by remaining outside the wetland/buffer area located to the west of Hangar Building 37. Additionally, Alternative 2 maximizes the use of the existing impervious area around the T-Hangars which today is used as apron area.

#### **3.3.2      *North Airfield Area***

The North Airfield Area alternatives comprise two redevelopment areas (totaling 14 acres); one is a corporate hangar development area and the other is a development site for the T-hangars that are proposed to be relocated from the Pine Hill Area and which will be accessible on the landside via Hartwell Road. Both alternatives propose 3 T-hangar units in two or three buildings, and are likely to include at least one 40,000 square foot hangar and two 30,000 square foot hangars with associated vehicle parking areas and aircraft apron and parking. A new taxilane would be constructed off of Taxiway R to access these aviation development areas. Both areas would have landside access via the existing roadway and access control gates at Hartwell Road.

##### **3.3.2.1      No Action Alternative**

This alternative would not relocate the T-hangars to the North Airfield Area and no additional hangar space would be constructed. No additional ramp or apron space would be available for corporate use either. Since this alternative does not meet the purpose and need of meeting demand for additional corporate hangar space, nor reduce unnecessary aircraft ferrying this alternative was not selected.







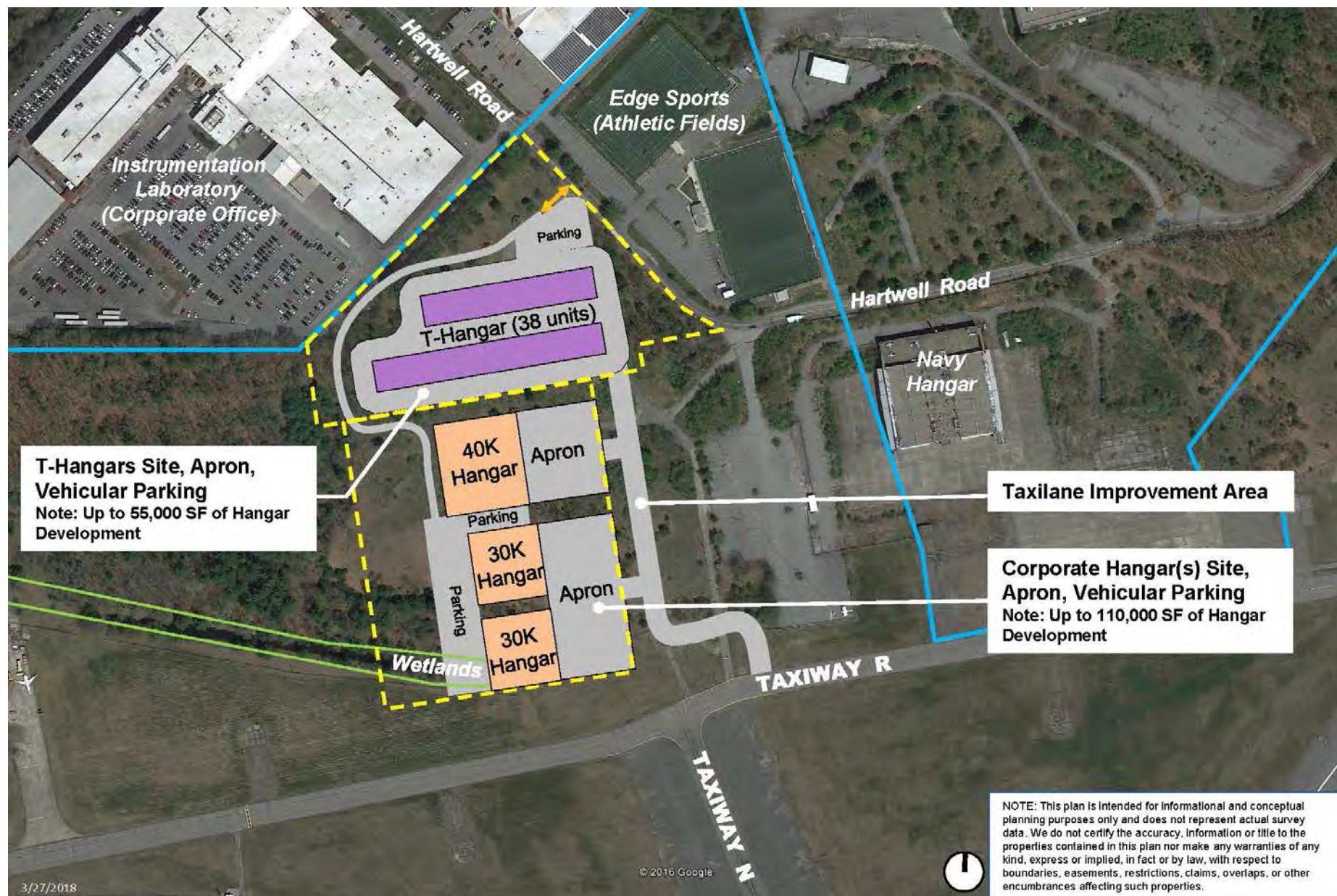
### **3.3.2.2      Alternative 1 – Western Development**

The Hangar site is currently mostly vegetated with grass and contains a small manmade wetland area of approximately 600 square feet that provides drainage relief to the airfield. The three new hangars would be accessed via an access road off of Hartwell Road that would also be used to access the T-Hangar site (see Figure 3-5). Operationally, the layout is ideal for new hangar development due to its easy access from Taxiway R and runways. The T-Hangar site contains some impervious roadway area that remains from its previous use as a United States Air Force (USAF) trailer park. Alternative 1 would impact approximately 600 square feet of vegetated wetlands and associated buffer zone at the western edge of the site and would not make use of the already impervious surface that currently exists adjacent to the Navy Hangar. This alternative utilizes one point of entry for both sites from Hartwell Road. Additionally, the construction of a longer access road to the Corporate Hangar site would have additional impacts by increasing the amount of new impervious surface which would need to be offset by pavement removal or use of other infiltration practices.

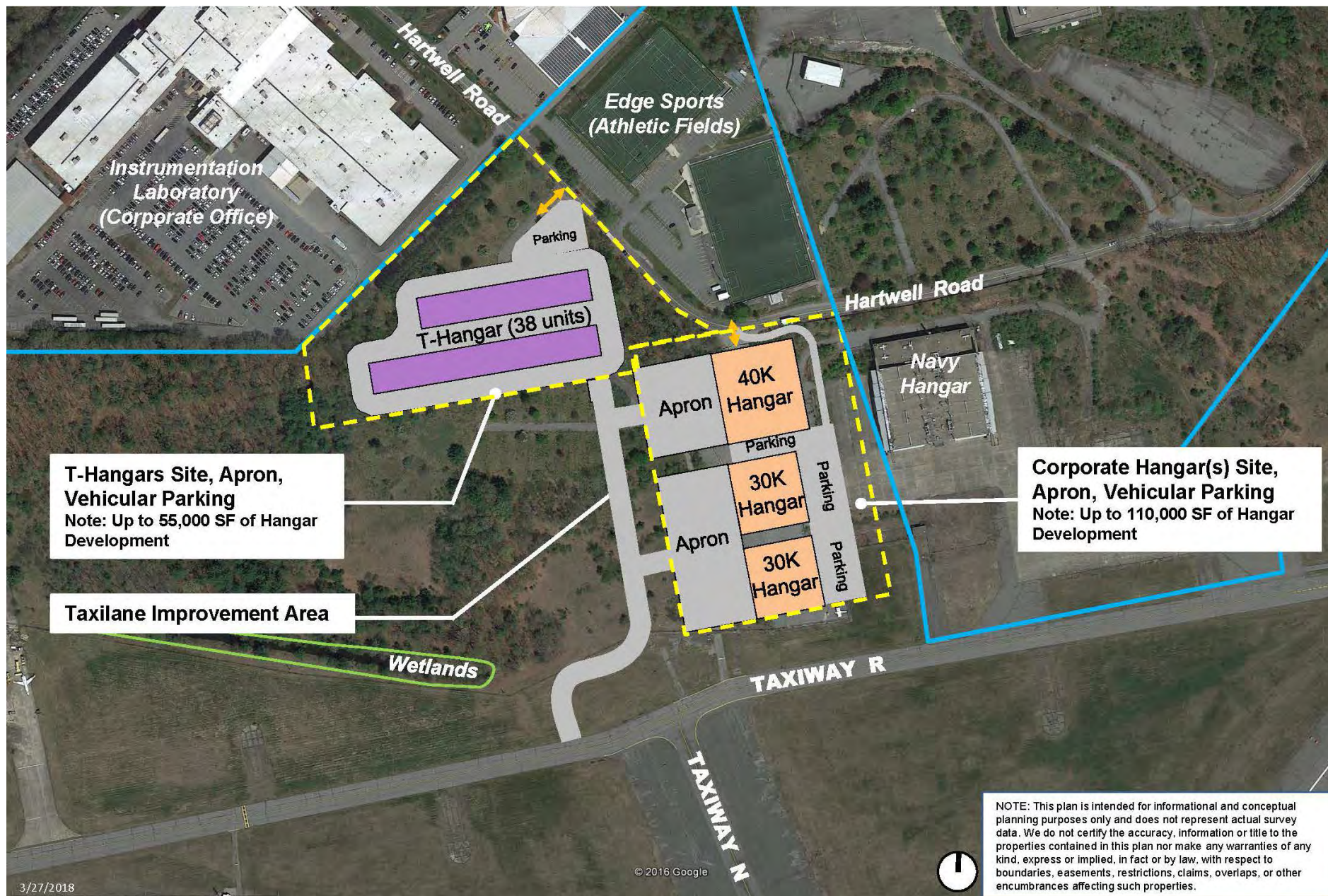
### **3.3.2.3      Alternative 2 – Parking Lot Development (Proposed Action)**

The Hangar site is primarily impervious but has some grassed areas. The site was formerly a parking lot and a USAF trailer park, and is occasionally used for construction staging. Remnants of the mobile home foundations and roadway network still remain. The two or three new Hangars would be accessed via an existing curb cut on the site at Hartwell Road (see Figure 3-6). Operationally, the layout is ideal for new hangar development due to its easy access from Taxiway R and runways. The proposed T-hangar site contains a small amount of impervious area from its previous use as the USAF Trailer Park, totaling approximately 4 acres of asphalt. Alternative 2 is configured to maximize operational facilities. The environmental impacts for Alternative 2 are minimized by it being outside the wetland buffer area. The site also makes use of an existing impervious area which limits impacts to the watershed and adjacent Massachusetts Natural Heritage and Endangered Species Program (MNHESP) habitat. Alternative 2, while similar to Alternative 1, makes use of existing roadway and gate accesses from Hartwell Road and would therefore offer some construction cost savings. This alternative is the most efficient use of space, given the size of the Proposed Action. The location of the North Airfield Area is ideally situated in order to preserve opportunities for development in the future.









## Section 4.0

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### Affected Environment



## 4.0 AFFECTED ENVIRONMENT

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This section describes existing conditions on and near the proposed redevelopment areas at Hanscom Field. It identifies the resources that may be affected by the proposed actions described above in Section 1. There are 14 possible environmental impact categories identified by FAA Order 1050.1F. As stated in Paragraph of 4-2.c of FAA Order 1050.1F, *“[i]f an environmental impact category is not relevant to the proposed action or any of the reasonable alternatives identified (i.e., the resources included in the category are not present or the category is not otherwise applicable to the proposed action and alternative(s)), this should be briefly noted and no further analysis is required.”* It is not the intent of this document to provide detailed discussion or analysis of all categories; rather, only those areas where there is the potential for there to be significant environmental impact caused by the proposed action and alternatives, or where there are uncertainties which require evaluation, are identified in this document. The area of analysis for direct and indirect impacts includes the Pine Hill Area and North Airfield Area, and where necessary, is expanded to include Hanscom Field and the surrounding communities.

Environmental concerns and possible hazards are an important consideration for any public use airport. This environmental overview takes as its guide the requirements of FAA Order 1050.1F. The following sections describe the existing conditions of the NEPA review factors that potentially may be affected by the proposed actions.

This EA also relies on the 2012 Hanscom ESPR for detailed discussion of airport-wide site conditions and overall project context and consideration of cumulative effect. The 2012 ESPR is available here: <http://www.massport.com/massport/about-massport/project-environmental-filings/hanscom-field/>.

### 4.1 Project Location

Hanscom Field is comprised of over 1,300 acres within four different municipalities, Bedford, Concord, Lexington, and Lincoln, approximately 20 miles west of Boston. Operated in 1941 as a military facility, civilian operations did not become dominant until 1974 when Massport took over control and military operations declined to approximately one percent. Since then, Hanscom Field is identified as a general aviation facility with a mix of corporate aviation, recreation pilots, flights schools, commuter/commercial air services, with some charter and light cargo.

The proposed hangar development areas are located in two separate, distinct portions of the airfield.

#### **4.1.1 Pine Hill Area**

The 10.3 acre Pine Hill Area is in Concord, adjacent to Taxiway M at the western extent of the Hanscom Field. The area is adjacent to the Middlesex Green Office Parking Area to the west, a small residential neighborhood to the southwest along Fuller Lane, Taxiway M to the east, and Building 25 owned by Massport and currently leased to the United States Air Force.

It is currently occupied by three T-hangar buildings (Buildings 37, 38 and 39) comprising 38 units, associated paved apron and ramp space, and borders the western boundary of Hanscom Field by Virginia Road which is comprised of 4.1 acres of existing impervious surface. The western portion of the area is a maintained grassy area with perimeter security fencing; outside the fencing an undeveloped portion consisting of upland wooded and wetland areas. See Site Photographs in Attachment A.

#### **4.1.2 North Airfield Area**

The North Airfield Area contains two designated hangar development areas totaling 14.0 acres and is located on the north side of Hanscom Field in Bedford, between Taxiway R and Hartwell Road. The North Airfield Area locations are adjacent to the Navy Hangar to the east, Taxiway R to the south, Instrumentation Laboratory (Corporate Office Center) to the northwest, and Hartwell Road to the north. This vacant area consists of primarily scrubby grassland with scattered trees and remnant impervious surfaces from past use as USAF housing and parking. Portions of the site area have been utilized for temporary construction staging of vehicles, trailers, and equipment. There are four acres of existing impervious surface. See Site Photographs in Attachment A.

## **4.2 Operations and Future Forecasting**

Today, Hanscom Airfield is primarily a general aviation (GA) airport, providing local residents and businesses access to the National Air Transportation System. As a gateway to the community, the airport offers an entrance point for business, recreation, and tourism. Aircraft operations include commuter, business, charter, light cargo, personal aircraft, air taxi, medical, military and flight school activity. Many of the major businesses in the area and their customers use the airport. Approximately 67 percent of the aircraft using the facility are two- to twelve-seat single- and twin-engine aircraft. Total activity at the airport was less than 122,000 operations in 2016, down 5 percent from 2015. At its peak in the mid1970s, Hanscom Field accommodated over 300,000 annual operations.

It is expected that the new hangars will be occupied by corporate jets including a mix of aircraft already operating at Hanscom and new users. In 2016, Hanscom accommodated approximately 26,100 annual business jet operations; the 2012 ESPR evaluated approximately 35,000 annual business jet operations for the 2020 future scenario and nearly 47,000 annual business jet operations for the 2030 scenario. Any additional operations associated with the new hangar spaces would be expected to fall well within the operational and environmental scenarios evaluated in the 2012 ESPR.

As was described in the Purpose and Need Section in Chapter 2 of this EA, the three FBOs at Hanscom are currently operating over capacity; they are unable to meet the demand for hangar space, particularly for business aircraft, and must turn away potential customers seeking either permanent or day-use space at the field. This results in increased numbers of operations at the field because business aircraft that would otherwise be based at the field to

move passengers are instead forced to arrive at Hanscom to drop off or pick up passengers and depart to wait at another facility prior to returning to Hanscom for the passengers. This ferrying effect that results from the lack of hangar space at Hanscom essentially creates four trips with two empty legs, when only two trips would be required, were there sufficient hangar space to accommodate demand. Massport expects that the proposed concepts will accommodate between 10 and 12 aircraft, some of which are already based at Hanscom. Overall, because of the additional hangar space, there may be fewer total business landings and takeoffs than would occur without the new hangar space due to the decreased need to ferry aircraft.

## **4.3 Existing Conditions**

### **4.3.1 *Air Quality***

Air quality assessments for proposed federal actions may be necessary for compliance with the requirements of NEPA, the Clean Air Act (CAA), and other environmental regulations. In addition to federal requirements, many states and local areas have air quality requirements that may address airports and air bases.

As part of this Draft EA, an air quality impact analysis must be performed for existing conditions and each viable project alternative. This must include an analysis and conclusions which address the attainment and maintenance of established air quality standards.

#### **4.3.1.1 National and State Ambient Air Quality Standards**

The 1970 CAA was enacted by Congress to protect the health and welfare of the public from the adverse effects of air pollution. As required by the CAA, the United States Environmental Protection Agency (EPA) promulgated National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), carbon monoxide (CO), ozone (O<sub>3</sub>), and lead (Pb). The NAAQS are listed in Table 3-1. Massachusetts has similar standards, referred to as Massachusetts Ambient Air Quality Standards (MAAQS).

The NAAQS presented in Table 4-1 specify concentration levels for various averaging times. The NAAQS includes both “primary” and “secondary” standards. The primary standards are intended to protect human health; whereas, the secondary standards are intended to protect public welfare from any known or anticipated adverse effects associated with the presence of air pollutants, such as damage to vegetation.

**Table 4-1 National and Massachusetts Ambient Air Quality Standards**

| Pollutant         | Averaging Period         | NAAQS ( $\mu\text{g}/\text{m}^3$ ) <sup>1</sup> |           | MAAQS ( $\mu\text{g}/\text{m}^3$ ) <sup>1</sup> |             |
|-------------------|--------------------------|---|-----------|---|-------------|
|                   |                          | Primary   | Secondary | Primary   | Secondary   |
| NO <sub>2</sub>   | Annual <sup>(1)</sup>    | 100   | Same      | 100   | Same        |
|                   | 1-Hr <sup>(2)</sup>      | 188   | None      | <b>None</b>                                     | None        |
| SO <sub>2</sub>   | Annual <sup>(1)(9)</sup> | 80  | None      | 80  | None        |
|                   | 24-Hr <sup>(3)(9)</sup>  | 365   | None      | 365   | None        |
|                   | 3-Hr <sup>(3)</sup>      | None  | 1300      | None  | 1300        |
|                   | 1-Hr <sup>(4)</sup>      | 196   | None      | <b>None</b>                                     | None        |
| PM <sub>2.5</sub> | Annual <sup>(1)</sup>    | 12  | 15        | <b>None</b>                                     | <b>None</b> |
|                   | 24-Hr <sup>(5)</sup>     | 35  | Same      | <b>None</b>                                     | None        |
| PM <sub>10</sub>  | Annual <sup>(1)(6)</sup> | None  | None      | <b>50</b>                                       | Same        |
|                   | 24-Hr <sup>(3)(7)</sup>  | 150   | Same      | 150   | Same        |
| CO                | 8-Hr <sup>(3)</sup>      | 10,000  | Same      | 10,000  | Same        |
|                   | 1-Hr <sup>(3)</sup>      | 40,000  | Same      | 40,000  | Same        |
| Ozone             | 8-Hr <sup>(8)</sup>      | 147   | Same      | <b>235</b>                                      | Same        |
| Pb                | 3-month <sup>(1)</sup>   | 1.5   | Same      | 1.5   | Same        |

Differences in NAAQS and MAAQS are highlighted in **BOLD**.

<sup>(1)</sup> Not to be exceeded.

<sup>(2)</sup> 98th percentile of one-hour daily maximum concentrations, averaged over three years.

<sup>(3)</sup> Not to be exceeded more than once per year.

<sup>(4)</sup> 99th percentile of one-hour daily maximum concentrations, averaged over three years.

<sup>(5)</sup> 98th percentile, averaged over three years.

<sup>(6)</sup> EPA revoked the annual PM<sub>10</sub> NAAQS in 2006.

<sup>(7)</sup> Not to be exceeded more than once per year on average over three years.

<sup>(8)</sup> Annual fourth-highest daily maximum eight-hour concentration, averaged over three years.

<sup>(9)</sup> EPA revoked the annual and 24-hour SO<sub>2</sub> NAAQS in 2010. However, they remain in effect until one year after the area's initial attainment designation, unless designated as "nonattainment".

Source: <http://www.epa.gov/ttn/naaqs/criteria.html> and 310 CMR 6.04

<sup>1</sup> Microgram per cubic meter.



The NAAQS also reflect various durations of exposure. The short-term periods (24 hours or less) refer to exposure levels not to be exceeded more than once a year. Long-term periods refer to limits that cannot be exceeded for exposure averaged over three months or longer.

Although not considered a “criteria pollutant” in the traditional sense where there is a concentration standard protective of human health and/or property, carbon dioxide (CO<sub>2</sub>) is considered a “greenhouse gas” and analysis of CO<sub>2</sub> emissions are required as part of an air quality analysis.

#### 4.3.1.2 Attainment Status

Section 107 of the 1977 CAA Amendment requires that the EPA publish a list of the geographic areas in compliance with the NAAQS, and those areas not in compliance with the NAAQS. Areas not in NAAQS compliance are deemed non-attainment areas. Areas that have insufficient data to make a determination are deemed unclassified and are treated as being attainment areas until proven otherwise. An area’s designation is based on the data collected by the state monitoring network on a pollutant-by-pollutant basis.

The attainment status for each pollutant is shown in Table 4-2.

**Table 4-2 Middlesex County Attainment Status**

| Pollutant   | Status  |
|---|---|
| Sulfur Dioxide (SO <sub>2</sub> )<br>(1-hour and annual)        | Better than national standards (Attainment)<br>EPA is still designating States for the 1-hour SO <sub>2</sub> standard. |
| Carbon Monoxide (CO)<br>(1- and 8-hour)                         | Maintenance (moderate) (Only the cities of: Cambridge, Everett, Malden, Medford, and Somerville.)                       |
| Ozone (O <sub>3</sub> )<br>(8-hour)                             | Unclassifiable/Attainment (2008)<br>Unclassified (2015)   |
| Particulate Matter (PM <sub>10</sub> )<br>(24-hour)             | Unclassifiable  |
| Nitrogen Dioxide (NO <sub>2</sub> )<br>(annual)                 | Unclassifiable/Attainment   |
| Particulate Matter (PM <sub>2.5</sub> )<br>(annual and 24-hour) | Unclassifiable/Attainment   |
| Lead (Quarterly)  | Unclassifiable/Attainment   |

Source: 40 CFR 81.322, EPA’s “Green Book,” and Massachusetts 2015 Air Quality Report

#### **4.3.1.3 State Implementation Plan**

Massachusetts is designated as nonattainment for ozone. States with nonattainment areas show their intent to meet the NAAQS by preparing State Implementation Plans (SIP) outlining realistic methods to do so in the required timeframe.

Massachusetts has an approved SIP for 1-hour ozone (from 2002) and an approved SIP for 8-hour ozone (from 2008).

#### **4.3.1.4 Environmental Conditions**

The study area for Air Quality includes the entirety of Hanscom Field. The primary air pollutant sources at Hanscom Field are aircraft operations and landside roadway traffic. Other sources include small combustion units such as heating and water boilers and emergency generators, and fugitive emissions from fuel storage spillage, and refueling activities. Prior studies have shown that emissions from these latter sources are very small compared to the aircraft and groundside roadway traffic (Massport 2012 ESPR).

#### **4.3.1.5 Criteria Pollutant Ambient Air Quality Data**

To estimate background pollutant levels representative of the area, the most recent data obtained from the Massachusetts Department of Environmental Protection (MassDEP) air quality reports were reviewed. Typically, the use of the latest three years of available monitoring data is representative of the Proposed Action development areas. The data for SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>, are from the Kenmore Square monitoring station in Boston. The data for CO and Lead are from the Harrison Avenue station, also in Boston. Ozone data are from the monitor at 11 Technology Drive, in Chelmsford.

A summary of the background air quality concentrations is presented in Table 4-3.

For short-term averages (24 hours or less), the highest of the yearly observations are estimated to be the background concentration, with the exception of the PM<sub>2.5</sub> 24-hour value where the average of the 98th percentile concentrations was used, consistent with the short-term ambient air quality standards. The short-term ambient air quality standards are not to be exceeded more than once per year. For long-term averages, the highest yearly observation was used as the background concentration. Again, with PM<sub>2.5</sub>, the annual background concentration is the average of the three years.

**Table 4-3 Observed Ambient Air Quality Concentrations**

| Pollutant                         | Averaging Time  | 2014   | 2015   | 2016   | Background Concentration ( $\mu\text{g}/\text{m}^3$ ) <sup>2</sup> | NAAQS   | Percent of NAAQS |
|-----------------------------------|-----------------|--------|--------|--------|--|---------|------------------|
| SO <sub>2</sub> <sup>(1)(5)</sup> | 1-Hour (4)      | 25.4   | 14.4   | 10.7   | 16.9   | 196.0   | 9%               |
|                                   | 3-Hour (6)      | 24.6   | 11.5   | 10.0   | 24.6   | 1300.0  | 2%               |
|                                   | 24-Hour         | 13.1   | 7.6    | 5.2    | 13.1   | 365.0   | 4%               |
|                                   | Annual          | 2.5    | 1.3    | 1.1    | 2.5  | 80.0    | 3%               |
| PM-10                             | 24-Hour         | 53.0   | 30.0   | 30.0   | 53.0   | 150.0   | 35%              |
|                                   | Annual          | 14.9   | 14.2   | 14.1   | 14.9   | 50.0    | 30%              |
| PM-2.5                            | 24-Hour (4)     | 14.6   | 14.5   | 13.0   | 14.0   | 35.0    | 40%              |
|                                   | Annual (4)      | 6.1    | 6.5    | 6.2    | 6.3  | 12.0    | 52%              |
| NO <sub>2</sub> <sup>(3)</sup>    | 1-Hour (4)      | 92.1   | 105.3  | 88.4   | 95.3   | 188.0   | 51%              |
|                                   | Annual          | 32.3   | 32.5   | 28.3   | 32.5   | 100.0   | 33%              |
| CO <sup>(2)(6)</sup>              | 1-Hour          | 1489.8 | 1560.9 | 2760.7 | 2760.7   | 40000.0 | 7%               |
|                                   | 8-Hour          | 1260.6 | 1031.4 | 2062.8 | 2062.8   | 10000.0 | 21%              |
| Ozone                             | 8-Hour          | 125.6  | 119.7  | 129.6  | 129.6  | 147.0   | 88%              |
| Lead                              | Rolling 3-Month | 0.014  | 0.016  | 0.017  | 0.017  | 0.15    | 12%              |

Notes:

From 2014-2016 EPA's AirData Website

<sup>(1)</sup> SO<sub>2</sub> reported ppb. Converted to  $\mu\text{g}/\text{m}^3$  using factor of 1 ppm = 2.62  $\mu\text{g}/\text{m}^3$ .

<sup>(2)</sup> CO reported in ppm. Converted to  $\mu\text{g}/\text{m}^3$  using factor of 1 ppm = 1146  $\mu\text{g}/\text{m}^3$ .

<sup>(3)</sup> NO<sub>2</sub> reported in ppb. Converted to  $\mu\text{g}/\text{m}^3$  using factor of 1 ppm = 1.88  $\mu\text{g}/\text{m}^3$ .

<sup>(4)</sup> Background level is the average concentration of the three years.

<sup>(5)</sup> The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, page 35520.

<sup>(6)</sup> CO monitor at Kenmore Square was deactivated in January 2015. Harrison Avenue monitor used for 2015 and 2016.

Air quality reports published by MassDEP show the trends for all ambient pollutant concentrations decreasing over the past 30 years (Massport 2012 ESPR).

<sup>2</sup> Microgram per cubic meter.

#### 4.3.1.6 Hanscom and Regional Emissions

The 2012 ESPR presents aircraft and ground vehicle emissions for CO, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO<sub>2</sub>, and VOC at Hanscom from 1985 to 2012. From 2005 to 2012, total emissions have decreased for all criteria pollutants between 10 and 33 percent. Since operations have declined since 2012, it is likely that total emissions have similarly declined.

Future emissions are generally based on increased aircraft operations. The 2012 ESPR forecasts a two percent increase in aircraft operations and a 135 percent increase in enplaned passengers between 2012 and 2020, and a 15 percent increase in operations and a 75 percent increase in passengers between 2020 and 2030. Although operations have actually dropped since 2012, were there to be an increase in operations as projected in the 2012 ESPR, increased emissions would also be expected. Emissions of all six pollutants, except 2020 CO emissions, for the two future planning scenarios, would be higher than the emissions calculated for the year 2012. These emission changes would occur for two reasons: (1) increase in the total number of aircraft operations and the number of passengers carried, and (2) changes in the aircraft fleet mix. Decreases in CO emissions are generally due to groundside on-road vehicle engine improvements. Based on activity levels presented in the State of Hanscom reports since 2012, overall operations would not be expected to grow to the numbers predicted in the 2012 ESPR and therefore overall emission increases would be similarly reduced. The 2016 State of Hanscom can be found at <http://www.massport.com/hanscom-field/about-hanscom/publications-reporting/>.

The ESPR presents the total emissions in Middlesex County for 2011, obtained from the EPA National Emissions Inventory. Comparing the total aircraft and ground vehicle emissions to the regional emissions shows that Hanscom accounts for only a very small portion of the regional emissions. It would be expected that regional emissions would also increase from 2011 to 2030, further reducing the percentages shown in Table 4-4.

**Table 4-4 Hanscom vs Regional Emissions**

|  | CO      | NO <sub>x</sub> | VOC    | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2</sub> |
|--|---------|-----------------|--------|------------------|-------------------|-----------------|
| 2011 Middlesex County Total            | 142,311 | 23,352          | 26,617 | 16,462           | 4,657             | 6,222,519       |
| Hanscom 2012                           | 1,142   | 34              | 81     | 10               | 10                | 17,911          |
| Hanscom 2020                           | 1,116   | 42              | 106    | 10               | 10                | 22,650          |
| Hanscom 2030                           | 1,296   | 54              | 135    | 12               | 12                | 29,875          |
| 2030 Percent of<br>2011 Regional Total | 0.9%    | 0.2%            | 0.5%   | 0.1%             | 0.3%              | 0.5%            |

Also, as part of the ESPR, Massport performed a dispersion modeling analysis of pollutants emitted at Hanscom, and the effect on nearby communities for the forecast year of 2020 (Massport 2012 ESPR). It was shown that all modeled concentrations were well below the applicable NAAQS, and that the majority of the predicted total concentration of each



pollutant was comprised of the ambient background concentration. That is, the airfield contributed a relatively small amount of pollution compared to that already in the air being produced by activity in the area.

#### **4.3.1.7 Permitting**

Stationary sources of air pollution are typically units that combust fuel. In this case, these sources consist of heating and hot water units and emergency electrical generators. Cooling towers, although not a combustion source, are a source of particulate emissions.

It is expected that the majority of stationary sources (boilers, engines, etc.) may be subject to MassDEP's Environmental Results Program (ERP). The Proponent will complete the required applications and submittals for the equipment, as necessary. No sources are expected to meet or exceed the thresholds for a Non-Major Comprehensive Plan Approval.

#### **4.3.2 *Biological Resources (Fish, Wildlife and Plants)***

The assessment of biotic resources present on the Airfield used existing data (2012 ESPR), recent site visits, and review of available documentations. The analysis area for environmental resources affected by the Proposed Action focuses on the immediate project sites but includes the entire Hanscom Field.

##### **4.3.2.1 Vegetation**

Hanscom Field is located in the Eastern Plateau Physiographic Region, a low-lying region of eastern Massachusetts. Primary drainage in the region is provided by the Merrimack, Parker, Rowley, Ipswich, Concord, Sudbury, Assabet, Charles and Neponset Rivers. Hanscom Field is underlain by a complex assortment of Pleistocene Epoch glacial and recent deposits that overlay Silurian and Ordovician Period igneous and metamorphic bedrock. Following the retreat of the last glacier approximately 13,000 years ago, peat was deposited in wetland areas, and fill material was added during the development of the airfield in the last century.

Native soils within the perimeters of Hanscom Field have been disrupted by construction and associated earth-moving activities. The Soil Conservation Service has classified most of the soils on the airfield as "made land". The existing soils are generally a mixture of native soils, and their physical and chemical properties resemble the undisturbed soils. The land use and geology of the area have led to the establishment of the dominant natural communities of vegetation such as hardwood and soft wood forested uplands and wetlands with scattered upland and wetland shrub stands, and mowed grasslands. The perimeter of Hanscom Field consists of forested swamps, shrub swamps, emergent marshes, and streams. The airport infield areas are grasslands mowed to maintain visibility for operational safety in compliance with FAA standards.

Vegetation is limited within the active operating area which consists primarily of the airport runways, taxiways, aprons and structures, and asphalt roads. Most of these developed areas are vegetated with lawns and ornamental trees and shrubs. All upland areas have been influenced by human activity. Naturally vegetated plant communities in the vicinity of Hanscom Field primarily are composed of mixed forests and successional uplands, as well as wetlands and mowed grasslands. Forested, emergent and scrub/shrub wetlands are all present at Hanscom Field, mainly along the perimeter outside the active airport operating areas.

As described below, portions of the airfield are mapped as grassland habitat for two State-listed rare bird species. The construction will affect a small area mapped as grassland which is actually west of the existing Pine Hill T-Hangars and completely separated from the larger airfield grassland areas. Inclusion of this area in the Massachusetts Natural Heritage and Endangered Species Program (MNHESP) habitat polygon is considered a mapping issue as this location is primarily paved area and existing T hangars. Once a final design is prepared, Massport will confirm this interpretation with MNHESP.

#### **4.3.2.2 Wildlife and Fish Habitat**

Wildlife habitat is generally thought of as the sum of food, water, and cover, and their spatial distribution that a given species needs to survive and reproduce in a particular area. Wildlife species have specific habitat requirements, such that the distribution and abundance of each species are limited by the quality and quantity of available habitat in a given area (Degraf 2006). Certain undeveloped portions of the airport provide suitable habitat for a number of plant and wildlife species common to Massachusetts.

The variety of vegetative cover types, presence of wetlands and waterways, and undeveloped parcels on and in the vicinity of Hanscom Field provide potential habitat for wildlife species. Wildlife species that may live in the area include larger mammals such as whitetail deer, Eastern coyote, and red fox, and smaller mammals such as raccoon, striped skunk, opossum, gray squirrel, and various species of mice, voles, moles and shrews. Bird species near the Proposed Action area include various insectivorous and seed-eating passerines, ground-oriented species such as woodcock, and predators such as red-tailed hawks. Various reptiles and amphibians may be located near portions of the property as well, including the Eastern garter snake, Northern water snake, painted turtle, snapping turtle, green frog, and wood frog.

Perennial streams (Elm Brook and Shawsheen River) within and along the periphery of Hanscom Field are classified as Class B surface waters according to Massachusetts Surface Water Quality Standards (314 CMR 4.06), defined as “habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation” [314 CMR 4.05(3)(b)]. Based on Hartel, Halliwell and Launer (2002), fish species anticipated to occur in these surface waters include such warm water species as the common shiner, golden shiner, white sucker, creek chubsucker, brown bullhead, chain pickerel, and pumpkinseed.

#### 4.3.2.3 Rare and Endangered Species

##### Federally-Listed Species

The USFWS issued the Final Rule on the Northern Long-Eared Bat (*Myotis septentrionalis*) (NLEB) in the January 14, 2016 edition of the Federal Register (V. 81, No. 9, page 1900 – 1922) titled “Endangered and Threatened Wildlife and Plants; 4(d) Rule for the Northern Long-Eared Bat” (i.e., the “Final Rule”). The purpose of the Final Rule is to prohibit the intentional, or purposeful, take of NLEB throughout its range; except for specific instances to protect human health, property, or for scientific and conservation purposes. Take of NLEB is prohibited in hibernacula throughout its range, in areas affected by white nose syndrome, unless permitted by the USFWS. Incidental take of NLEB outside of hibernacula from otherwise lawful activities, other than tree clearing, is not prohibited by the Final Rule.

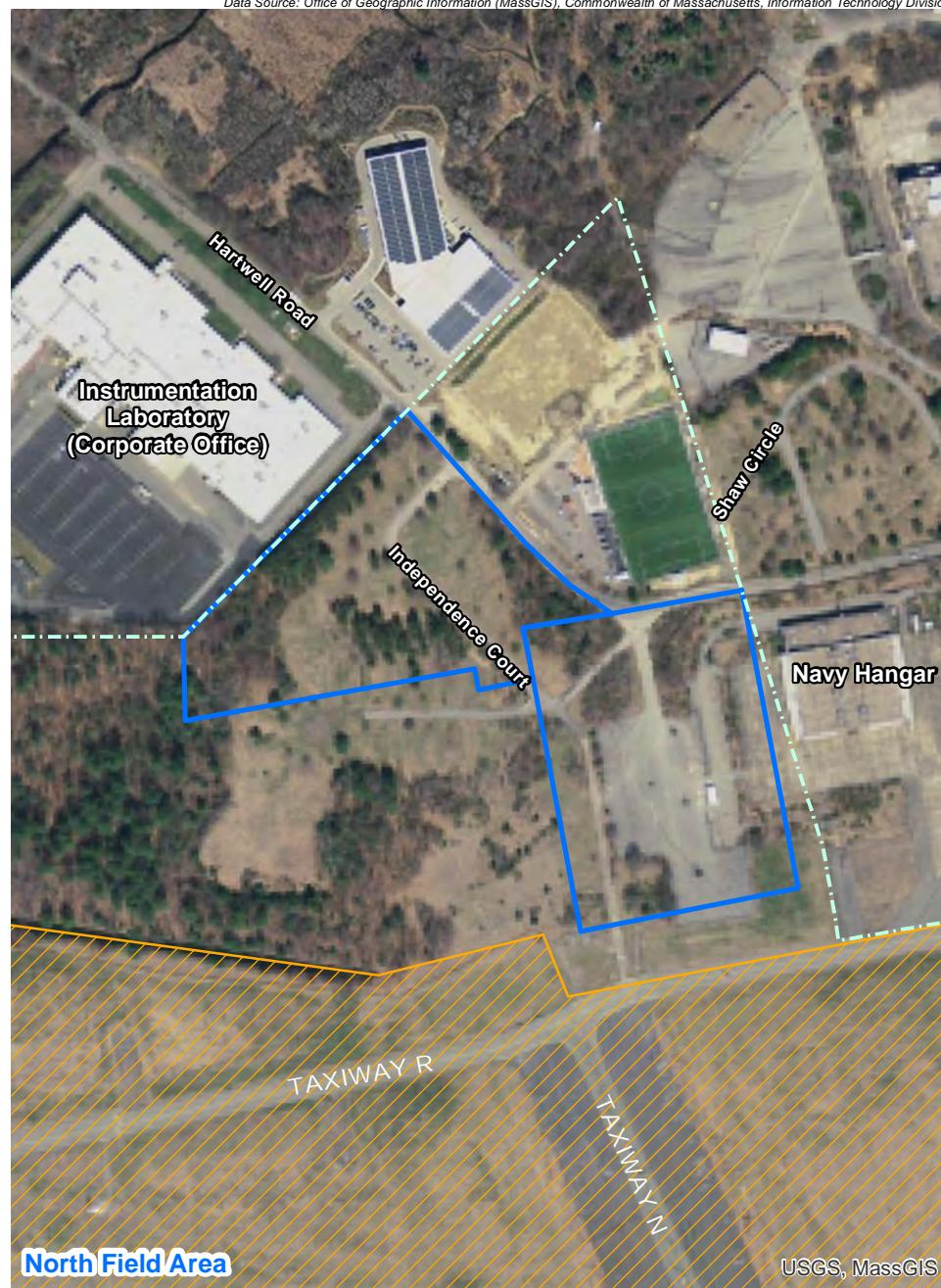
The NLEB range includes much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. NLEB spend winter hibernating in caves and mines, called hibernacula. They use areas in various sized caves or mines with constant temperatures, high humidity, and no air currents. During the summer, NLEB roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and dead trees (snags). Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. The majority of airfield, including the proposed development areas, is generally free of forest stands and thus lacks summer tree roosting habitat.

The USFWS does not require private landowners to conduct surveys on their lands for hibernacula and maternity roost trees. Location information for known hibernacula and maternity roost trees is generally kept in state Natural Heritage Inventory databases, thus consultation with state Natural Heritage Inventory databases is encouraged (see discussion below).

##### State-Listed Species

Portions of Hanscom Field near the Pine Hill Area are situated within an area identified in the NHESP as a Priority Habitat of Rare Species based on the 14<sup>th</sup> Edition Natural Heritage Atlas (August 1, 2017) (See Figure 4-1). Known occurrences of two grassland birds (Upland Sandpiper and Grasshopper Sparrow) in these mapped Habitat areas have remained the same since 2000 ESPR. Since the 2005 ESPR, two additional species (Blanding’s Turtle and Wood Turtle) have been observed at Hanscom Field. These four species are identified as endangered or threatened. NHESP does not identify any known roost or hibernacula locations for the NLEB proximate to the airfield (map dated November 29, 2016, MassGIS).





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### **4.3.3        *Section 4(f)***

Section 4(f) of the Department of Transportation Act of 1966 protects certain land uses from (DOT) projects. Section 4(f) relates to historic sites, properties and parks, recreation areas, and wildlife and waterfowl refuges. Although the entirety of Hanscom Field is surrounded by several listed 4(f) sites, including Great Meadows National Wildlife Refuge and the Minute Man National Historical Park, as detailed fully in Chapter 10 of the 2012 ESPR, none of these sites are within the project site boundaries (See Figure 4-2).

The Massachusetts Historical Commission (MHC) is the entity that functions as the State Historic Preservation Office (SHPO) for Massachusetts. Please see Section 4.3.5 below for additional discussion relative to state-listed properties in the online database Massachusetts Cultural Resource Information System (MACRIS).

The MHC and the Historical Commissions of the four towns within which Hanscom Field is located (Lincoln, Concord, Bedford, and Lexington) will be contacted and given opportunity to review the Draft EA and provide comment.

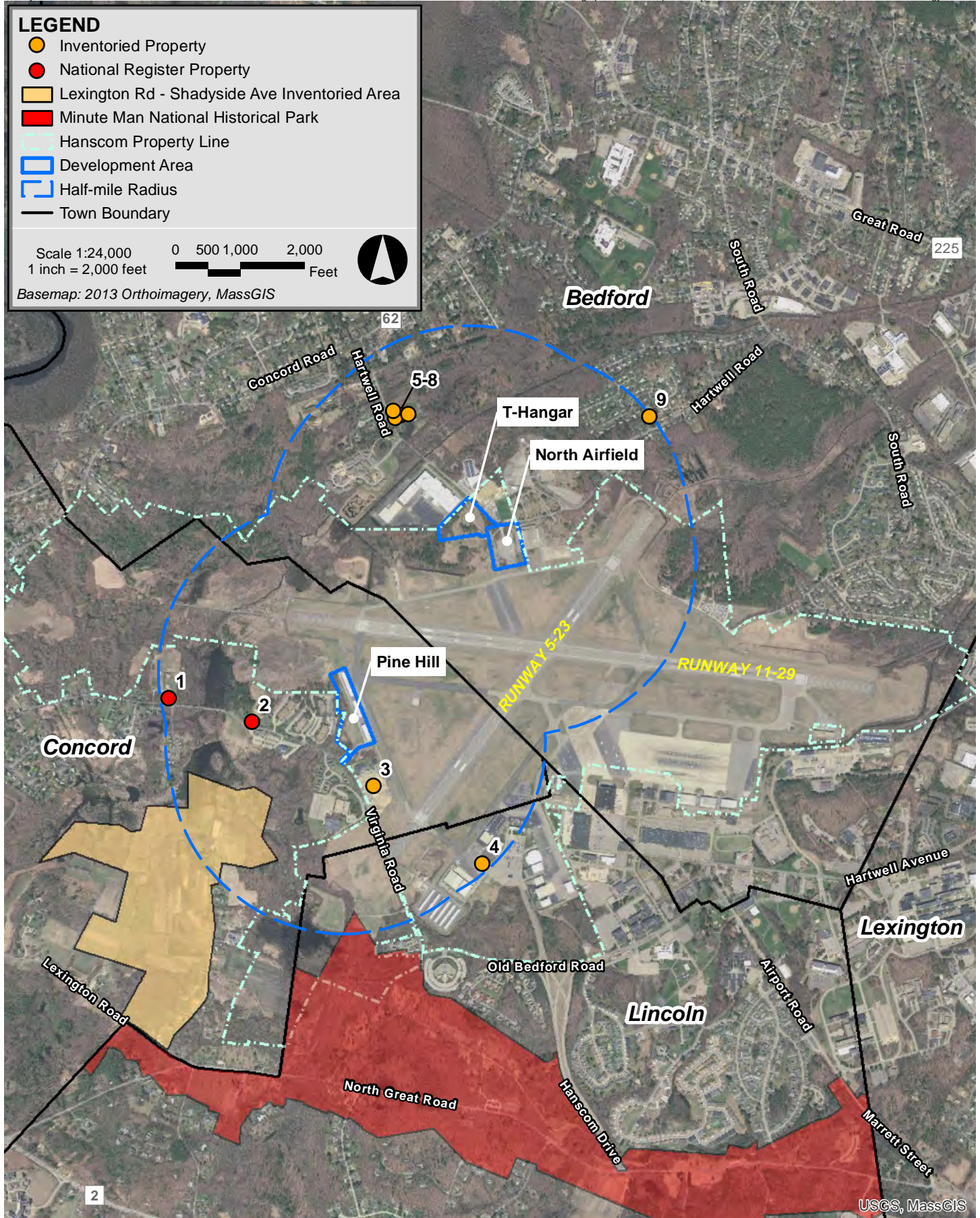
### **4.3.4        *Hazardous Materials***

#### **4.3.4.1        *MassDEP Reportable Releases***

The MassDEP reportable release database [<https://eeaonline.eea.state.ma.us/portal#!/search/wastesite>] was reviewed for all spills at sites located within 500 feet of the proposed project sites to ascertain if there have been any new releases as well as determine the locations of the releases described in the database since the 2012 ESPR was published (See Figure 4-3). There are spills identified in the 2012 ESPR that occurred at Massport-tenant occupied locations at the airport; however none have occurred at the Pine Hill or North Airfield areas. Release conditions at these sites have reached regulatory closure with the permanent solution as defined in the Massachusetts Contingency Plan (MCP). There is ongoing implementation of Hanscom Field's Spill Prevention Control and Countermeasure Plan (SPCCC) to ensure that all of Massport's hazardous material storage tanks are in compliance with current regulations and to monitor the age, condition, and regulatory compliance status of these tanks on an ongoing basis through the Tank Management Program. Massport employs pollution prevention measures as they apply to site drainage, material storage, material transfer, truck unloading operations, and site security as part of this plan.

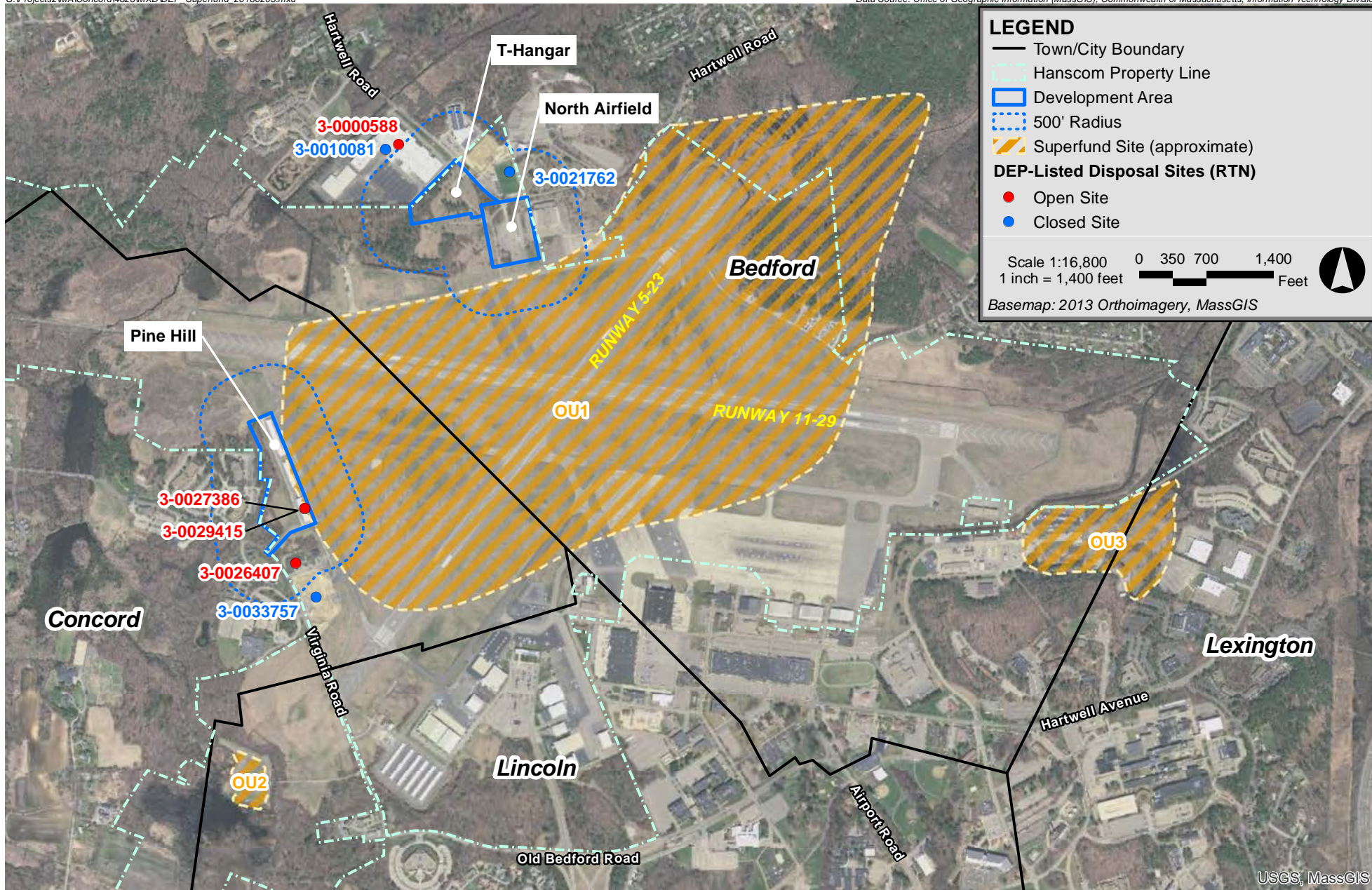
Multiple Release Tracking Notifications (RTN's) were identified within 500 hundred feet of the Proposed Action areas in the MassDEP reportable release database as depicted on Figure 4-3. None were located on the North Airfield Area. RTN 3-0021762 and RTN 3-0010081 associated with fuel oil spills just north west of the North Airfield Area have been closed.





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RTN 3-0588 is also associated with a Raytheon property and the site has been in active remediation to address chlorinated volatile organic compounds (CVOCs) in groundwater (GZA GeoEnvironmental Inc., 2017).

Multiple RTNs associated with Draper Labs-off site are located proximate to or on the Pine Hill Area. A monitoring well on the Pine Hill Area adjacent to the hangar buildings is associated with multiple RTNs (3-27386 and 3-29415). RTN 3-26407 was issued for a fuel oil release from a former underground storage tank (UST) at the Draper Lab and associated piping that was removed in 1995. Residually contaminated soil from this release was encountered during construction of a loading dock in 2006, and further investigation found that hydraulic oil under the building from a separate historical release was co-mingled with the fuel oil (Cooperstown Environmental LLC, 2017).

A groundwater treatment system was installed in 2007 to respond to contamination related to both the hydraulic oil and the fuel oil. Subsequent monitoring resulted in another RTN (3-27386) being assigned by MassDEP in January 2008 for reportable concentrations of lead and arsenic detected in groundwater at the site. Another release was identified in 2010 when contamination was discovered in a monitoring well (RTN 3-29415). Based on results presented in the 2012 monitoring report, lead and arsenic have been removed as contaminants at the site (Cooperstown Environmental LLC, 2017).

#### **4.3.4.2 Existing Buildings**

Massport works with tenants to identify ways to reduce the amount and toxicity of certain products used at Hanscom Field. Massport involves its tenants in achieving environmental compliance and pollution prevention. Massport provides ongoing technical assistance to tenants regarding new regulations and means for compliance through an inspection program. In addition, educational materials are distributed on pollution prevention, storm water best management practices, spill prevention and response procedures, and other topics. There is ongoing implementation of Hanscom Field's SPCC to ensure that all of Massport's hazardous material storage tanks are in compliance with current regulations and to monitor the age, condition, and regulators compliance status of these tanks on an ongoing basis through the Tank Management Program. Massport tenants receive MCP-compliant Stormwater Pollution Prevention Plan (SWPPP) training annually and updated SPCC plans. Massport employs pollution prevention measures as they apply to site drainage, material storage, material transfer, truck unloading operations, and site security as part of this plan.

#### **4.3.4.3 Hanscom Air Force Base (AFB) Superfund Sites**

Hanscom AFB maintained and operated Hanscom's airfield until 1974 and retains responsibility for any required clean-up that stems from this time as well as for any sites on Hanscom AFB property. Hanscom AFB is conducting environmental restoration efforts under the U.S. Air Force Installation Restoration Program (IRP), a federal Comprehensive Environmental Response, Compensation Liability Act (CERCLA)-based program. The



preliminary assessment/site investigation phase which commenced in 1982 of the IRP resulted in the identification of 22 specific sites as areas with the potential for environmental contamination from past waste management practices. Of the 22 sites, eight are located on Massport property. Investigations and appropriate response actions have been completed at 16 IRP sites and one IRP Area of Concern, and they have been closed out within the applicable regulatory framework (includes four IRP sites on Hanscom Field). In addition, investigations have been completed and long-term remedies are in place at the six remaining IRP sites.

These remaining sites are broken out into three separate Operating Units (OU). Two OUs are located adjacent to the airfield at the Hanscom AFB in Bedford, MA and one is located on Hanscom Field property (see Figure 4-3). OU-1 has an existing groundwater treatment system, the implementation of institutional controls, and the monitoring of the groundwater and surface water at Hanscom Field/Hanscom AFB. OU-2, a former landfill, has been capped. OU-3 which contains two sites: a former aviation fuel receiving, storage and dispensing site on Hanscom AFB, and a former filter bed/landfill. The implemented remedy includes the containment (pervious caps) of three landfill areas, removal of contaminated sediments and landfill debris and placement this material within the capped landfill area, long-term monitoring, institutional controls, and a groundwater compliance boundary. An assessment completed in 2012 indicated that these implemented remedies in each OU is *“protective of human health and the environment, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.”* (USAF, 2012).

#### **4.3.5        *Historic and Archeological***

Section 106 of the National Historic Preservation Act of 1966 and the Archaeological and Historic Preservation Act of 1974 are used to evaluate impacts to archaeological, architectural, and cultural resources, including those listed or eligible for listing in the National Register of Historic Places. Section 106 (36 CFR 800) requires that agencies consider what effects their actions and actions they may assist, permit, or license may have on historic resources. If a project involves federal assistance, permits, or licenses, then the entire undertaking will be subject to review by the MHC, in its role as the State Historic Preservation Officer (SHPO). The analysis area for these resources is limited to a half-mile within the project areas, which has been designated as the Area of Potential Effect (APE), as shown on Figure 4-2. Hanscom Field is surrounded by many listed Historical and Archaeological sites, including Minute Man National Historical Park. Review of their database via use of the online search tool Massachusetts Cultural Resource Information System (MACRIS) within a ½ mile of the project sites includes the properties listed in Table 4-5 below.

**Table 4-5 Historic Resources in the Vicinity of the Project Area**

| Label | MHCN     | Property Name                         | Address                    | Use Type  |
|-------|----------|---------------------------------------|----------------------------|---|
| 1     | CON.177  | Henry David Thoreau Birthplace        | 341 Virginia Road, Concord | Agricultural; Agricultural Field; Cooper; Dairy; Multiple Family Dwelling House; Orchard; Other Cultural; Other Educational; Poultry Farm; Single Family Dwelling House |
| 2     | CON.178  | Elm Brook Farm                        | 477 Virginia Road, Concord | Agricultural; Dairy; Other Recreational; Single Family Dwelling House   |
| 3     | CON.9047 | MIT Hangar – Hangar 24                | 711 Virginia Road, Concord | Hangar; Laboratory – Research Facility  |
| 4     | LIN.394  | Hanscom Field – Hangar 17             | Hanscom Drive, Lincoln     | Furnace; Hangar; Warehouse  |
| 5     | BED.187  | Chip-In Farm                          | 200 Hartwell Road, Bedford | Agricultural; Nursery; Poultry Farm; Single Family Dwelling House   |
| 6     | BED.496  | Chip-In Farm Barn                     | 200 Hartwell Road, Bedford | Agricultural; Out Building  |
| 7     | BED.498  | Chip-In Farm Chicken Barn             | 200 Hartwell Road, Bedford | Agricultural; Out Building  |
| 8     | BED.497  | Chip-In Farm General Store and Office | 200 Hartwell Road, Bedford | Business Office; General Retail Store   |
| 9     | BED.186  | John McGovern House                   | 93 Hartwell Road, Bedford  | Single Family Dwelling House  |

As detailed in Chapter 10 of the 2012 ESPR, none of the eligible sites are within the development area boundaries. Per the ESPR, the proposed hangars are located on existing developed areas, within an area assessed as having a low archaeological sensitivity.

The MHC is the entity that functions as the SHPO for Massachusetts. Review of their database via use of the MACRIS indicates that the proposed development areas do not contain eligible sites. MHC and the Historical Commissions of the four towns within which Hanscom Field is located (Lincoln, Concord, Bedford and Lexington) will be contacted and given opportunity to review the Draft EA and provide comment.

#### **4.3.6 Energy Supplies, Natural Resources and Sustainable Design**

The proposed hangars will be designed and constructed in accordance with LEED (Leadership in Energy and Environmental Design) Silver certification standards, at a minimum. LEED is a voluntary, consensus-based, market-driven program that provides third-party verification of green buildings through the US Green Building Council (USGBC). Participation in the LEED process demonstrates leadership, innovation, environmental stewardship and social responsibility. LEED for new construction takes an integrative approach to producing buildings that are designed to be efficient and have a lower impact on their environment. The LEED rating system tracks the sustainable features of a project by achieving points in the following categories: Location and Transportation, Sustainable Sites, Water Efficiency, Energy

and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation and Design Process, and Regional Priority Credits. The LEED v4 Reference Guide for Green Building Design and Construction is the most up-to-date and comprehensive guide for the design, construction and major renovations of commercial and institutional buildings (USGBC 2017; [www.usgbc.org/resources/leed-v4-building-design-and-construction-current-version](http://www.usgbc.org/resources/leed-v4-building-design-and-construction-current-version)).

#### **4.3.7 Noise**

The study area for noise includes Hanscom Field and areas of the surrounding communities. Data generated for the 2012 ESPR, the 2005 ESPR, the *Technical Memo Regarding Proposed Development of the East Ramp* that included data and trends from 2006 and 2007 (HMMH 2008), and the 2016 *Hanscom Field Annual Noise Report* (<http://www.massport.com/hanscom-field/about-hanscom/publications-reporting/>) show noise levels at Hanscom Field have decreased over the past decade, due primarily to technological trends toward quieter and better performing aircraft and an overall reduction in operations.

The FAA first issued noise standards for civil aircraft in 1969, when regulations established that minimum noise performance levels must be demonstrated for a new turbojet and transport category large airplane designs. In 1977, more stringent standards were adopted, and Stage 1, 2, and 3 classifications were introduced. Stage 1 airplanes do not meet either the 1969 or 1977 standards. Stage 2 airplanes meet the 1969 standards but do not meet the 1977 standards. Stage 3 airplanes meet the 1977 standards.

Each year, Massport prepares a noise report for Hanscom Field to report on aircraft activity and the noise environment at the airport. It includes data on the numbers and types of operations and overall noise exposure for the most recent calendar year. The 2017 report presented data on Hanscom Field's 2016 operations and used comparable data from previous study years to demonstrate trends in aviation activity and noise levels. This report included a comparison of 1995, 2000, and 2005 through 2010 noise levels recorded at six noise-monitoring sites located in the communities and on the airfield. Noise sensitive receptors such as hospitals, schools, religious sites, public facilities, and National Register of Historic Places and/or State Register of Historic Places were examined. Relevant noise data from the 2016 *Hanscom Field Annual Noise Report* (Massport 2017) include the following:

- ◆ While military flights represented approximately one percent of the total activity, they contributed 18 percent of the total departure noise exposure.
- ◆ Business jet activity, which represented 21 percent of the total activity, contributed 74 percent of the civilian departure noise.
- ◆ Since Hanscom has reduced touch and go traffic over Minute Man National Historical Park, an average of 22 percent fewer flights over the park.

As referenced in the 2016 State of Hanscom Noise Report, comparison of year 2012 Day-Night Sound Levels (DNL) noise contours prepared for the 2012 ESPR to the contours shown in the 2005 ESPR show that overall noise levels at Hanscom Field have decreased, largely due to lower activity levels by Stage 2 jets, aircraft technology and as well as decreases in nighttime operations. The total population exposed to levels greater than DNL 65 dB has decreased from 17 people in 2005 to 0 people in 2012 (see Figure 4-4).

Massport has implemented several policies that have had a positive impact on noise levels at Hanscom since 1978. The 1978 Hanscom Field Master Plan and Environmental Impact Statement (The Master Plan) and the 1980 General Rules and Regulations for Lawrence G. Hanscom Field include the policies and regulations that continue to guide Massport as it operates Hanscom Field. Since the adoption of these documents, Massport has worked closely with the Hanscom Field Advisory Commission (HFAC) and the Hanscom Area Towns Committee (HATS), as well as other interested parties, to balance its commitment to regional transportation and the business community with the need to recognize and minimize the airport's impact on the surrounding communities. For example, concepts for a new initiative to reduce touch and go traffic over Minute Man National Historical Park have resulted in an average of 22 percent fewer flights over the park since the inception of the program in 2009 as described in the 2016 Hanscom Annual Noise Report (Massport 2017).

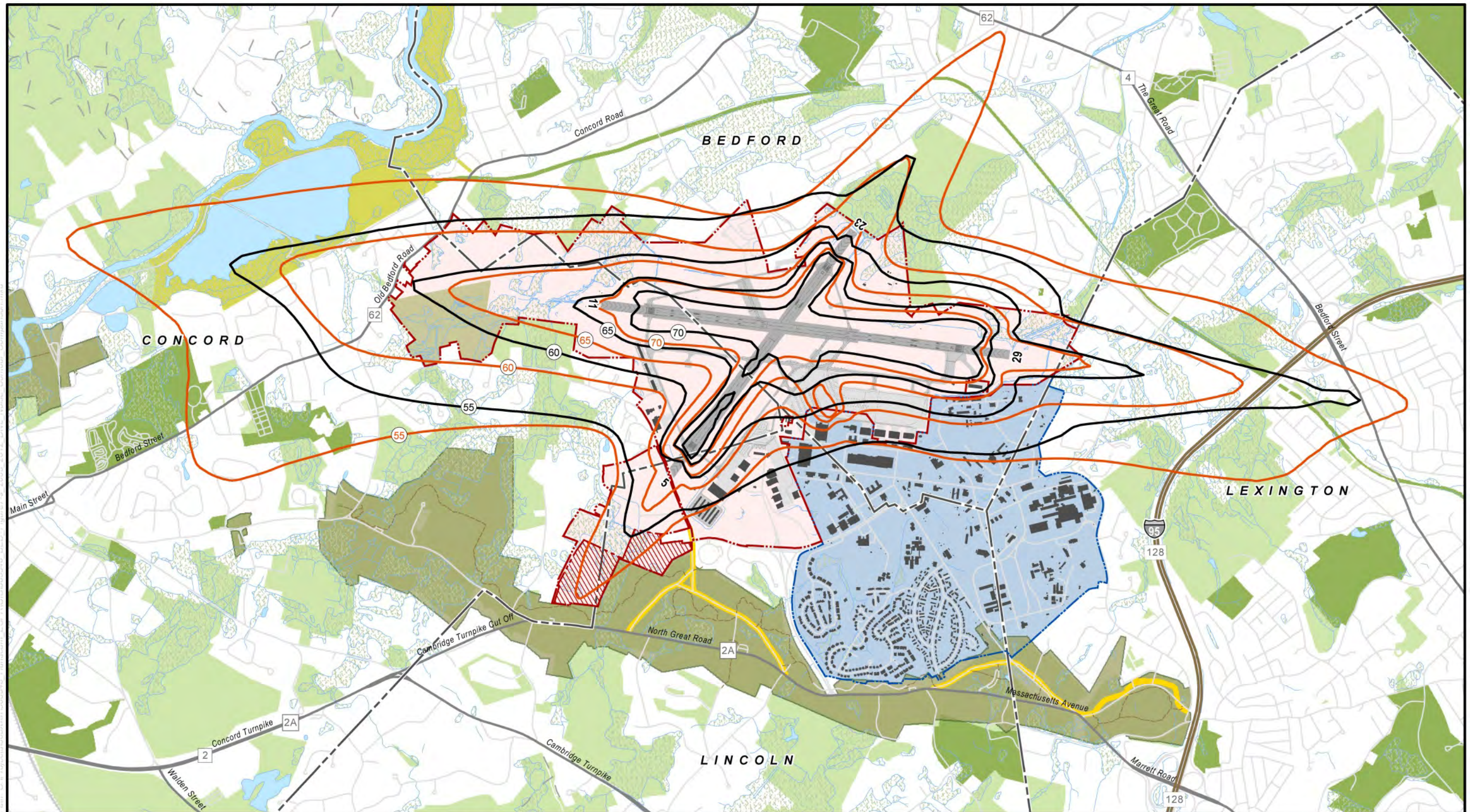
In 2001, Massport distributed "Fly Friendly" videos to all Hanscom pilots, flight schools, and FBOs. Massport now requires all pilots who receive a Hanscom ID badge to view training materials about quiet flying techniques. The quiet flying techniques are also described on Massport's website, on posters that are prominently displayed by the flight schools and the FBOs, and on handouts that are available for pilots to include with their airport flight materials (2016 Annual Noise Report for Hanscom Field).

#### **4.3.8      *Induced Socioeconomic***

Massport's facilities at Hanscom Field have been a vital link to domestic and international destinations for individual pilots, commuter airlines and local employers, including high technology corporations, research and development firms, and educational institutions. Businesses look for accessible air travel when deciding where to locate, and Hanscom provides local businesses with easy access to corporate travel opportunities.

In FY16, Massport invested \$6.5 million in airfield, terminal, equipment and other facility improvements required to maintain the airport. Past and future investments ensure that Hanscom will continue to be prepared to support future economic growth by serving the diverse needs of users who operate a wide variety of aircraft (Massport 2017).





Data Sources: MassGIS (Roads, Rail), March 5, 2013; MassGIS (Community Boundaries), March 5, 2013; NPS (Park Boundary), March 8, 2013; ArcGIS - Bing Online (Bing ArcGIS Online, 2011), May 06, 2013



The Massachusetts Department of Transportation conducted an economic impact study for 2014 activity levels at Massachusetts' airports (MassDOT Aeronautics 2014). There were 1,745 full-time equivalent jobs related to Hanscom Airfield activity. Annual wages for those workers whose employment is directly related to airport activity are nearly \$100 million. Hanscom generated estimated annual economic benefits of \$348 million when all the direct, indirect and induced economic benefits of the airport were considered. Estimated economic benefits described above do not include economic benefits generated by Hanscom Air Force Base (Massport 2017).

#### **4.3.9        *Visual Effects***

It is important to consider whether lighting associated with a proposed project might confuse or interfere with the vision of the air traffic controller, the vision of the pilots on approach to an airport runway, or whether it results in significant impacts to airport neighbors.

Existing lighting emission sources at Hanscom Field include airfield lighting and terminal/landside lighting. Airfield lighting includes high-intensity runway lights, taxiway edge lights, runway end strobe lights, runway centerline and touchdown zone lights. Building security lighting consists of common lighting sources such as roof perimeter lights and lighting from the interior of the structures.

#### **4.3.10        *Water Resources***

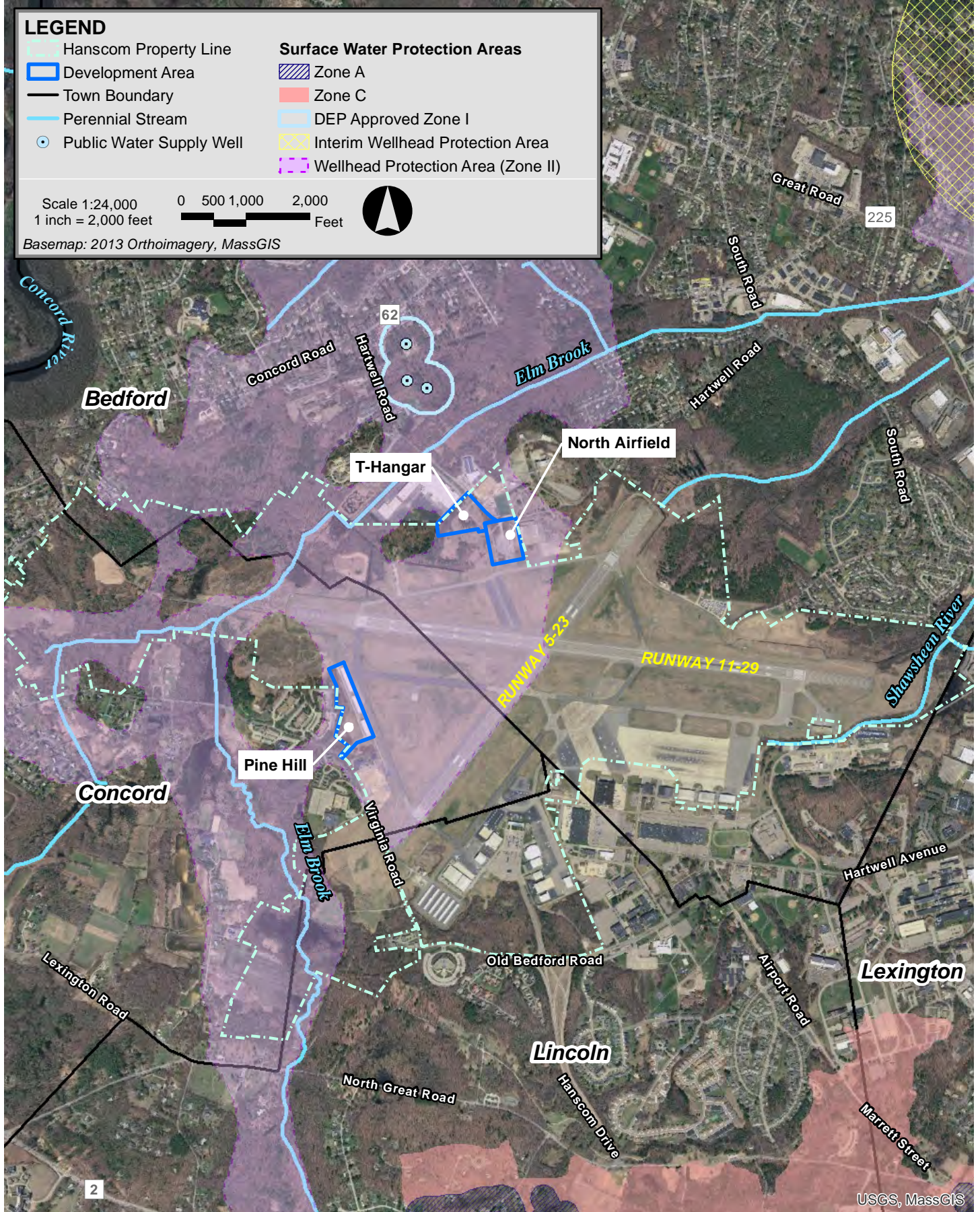
##### **4.3.10.1      *Groundwater***

The locations of public water supplies within Bedford, Concord, Lexington and Lincoln can be found on Figure 4-5. Municipal water supplies vary in distance from Hanscom Field from 0.9 to 7.3 miles.

Wellhead Protection Areas, also known as Zone II areas, are approved under the MassDEP's Drinking Water Program to protect the recharge area around public water supply ground water sources. The Massachusetts Drinking Water Regulations require that public water suppliers delineate Zone II areas and restrict certain land uses and activities in Zone IIs which may result in the contamination of a groundwater drinking supply. An approved Zone II Wellhead Protection Area overlaps the Hanscom Field and covers both project areas. The Zone II area is associated with three Hartwell Road wells in Bedford. There are no Surface Water Supply Protection Areas (Zone A, B, C) in Hanscom Field.

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. Stormwater discharges from construction activities (such as clearing, grading, excavating, and stockpiling) that disturb one or more





USGS, MassGIS

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acres, such as the proposed project, are regulated under NPDES stormwater program. Prior to discharging stormwater, construction operators must obtain coverage under an NPDES permit, which is administered in Massachusetts by the EPA.

Where the EPA is the permitting authority, construction stormwater discharges are almost all permitted under the Construction General Permit (CGP). The CGP requires compliance with effluent limits and other permit requirements, such as the development of a SWPPP. Construction operators intending to seek coverage under EPA's CGP must submit a Notice of Intent (NOI) certifying that they have met the permit's eligibility conditions and that they will comply with the permit's effluent limits and other requirements.

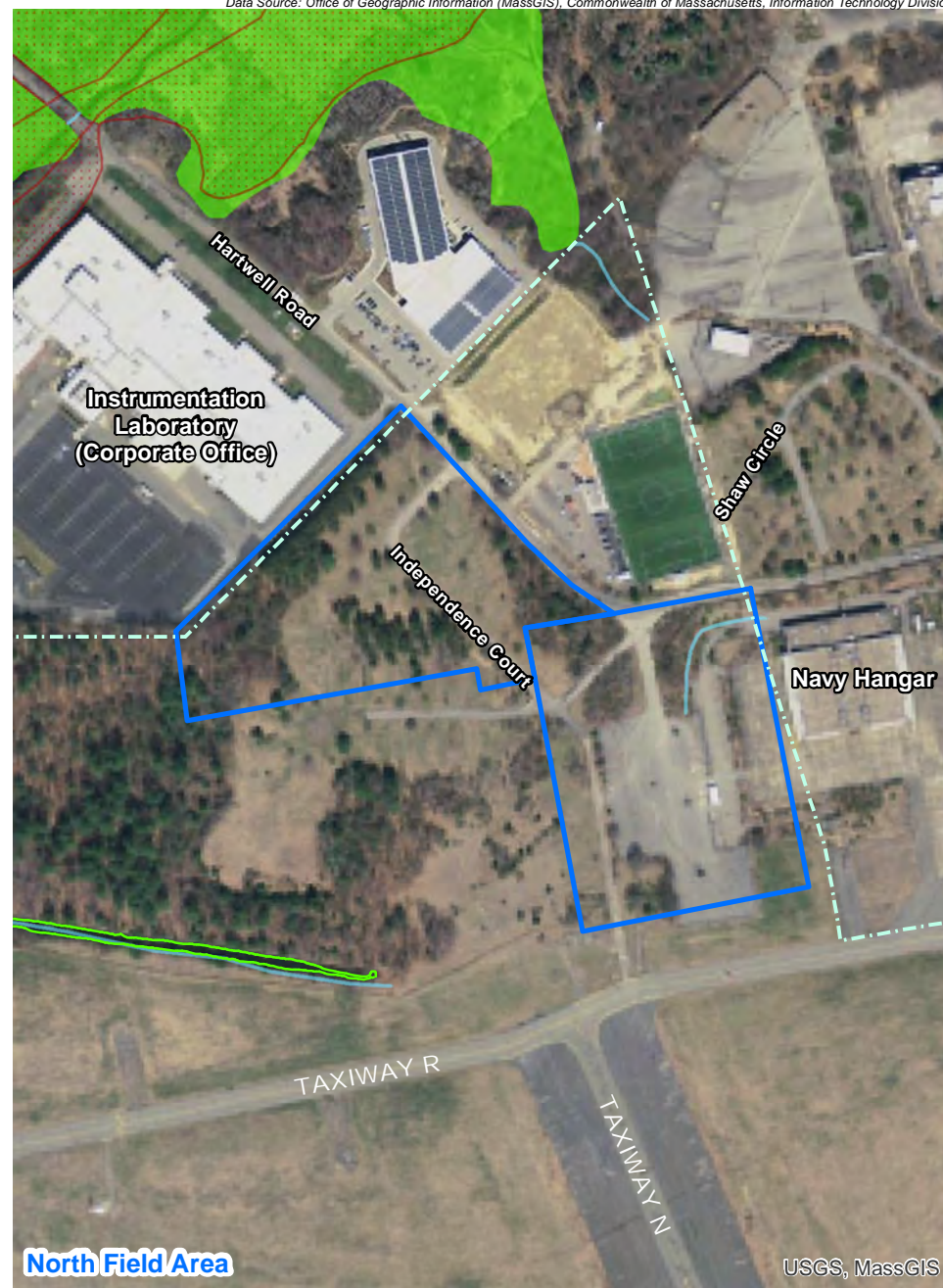
Airports in the United States, including Hanscom Field, are required to obtain a Stormwater Multisector General Permit under the NPDES permit program. Tenants who lease property on Hanscom Field and engage in activities covered under the permit program are listed as co-permittees. Massport has updated its SWPPP to include best management practices for stormwater management and snow removal (Massport 2015). Massport performs periodic visual inspections of water quality at Hanscom Field stormwater outfalls in compliance with the NPDES permit.

#### **4.3.10.2 Wetlands**

Wetlands in the vicinity of the two project areas are described in detail in the 2012 ESRP and depicted on Figure 4-6. Wetland resource areas at Hanscom Field include wetlands subject to regulation by both the Commonwealth of Massachusetts under the Wetlands Protection Act (WPA) and U.S. Army Corps of Engineers (USACE) under U.S. Clean Water Act (33 U.S.C. 1344, waters of the U.S.). The regulations of the Massachusetts WPA (310 CMR 10.00) define five freshwater wetland resource areas subject to protection: Banks, Bordering Vegetated Wetlands (BVW), Land Under Waterbodies/Waterways (LUW), Bordering/Isolated Land Subject to Flooding, and Riverfront Area. A 100-foot buffer zone is associated with regulated Bank and Bordering Vegetated Wetland.

Wetland resource areas are located on the two separate project areas. One DEP-mapped wetland system is present at the southwestern extent of the Pine Hill Area and is identified in the 2012 ESRP as Wetland 1-4. This small BVW functions as a detention basin and contains willow (*Salix sp.*), common reed (*Phragmites sp.*) and winterberry (*Ilex verticillata*) and is located just to the west of the proposed hangar development area. This BVW is hydrologically connected to a larger red maple swamp on the other side of Virginia Road. At the North Airfield Area, a drainage ditch containing Inland Bank and LUW drains to Elm Brook is located to the southwest of the proposed development (identified in the ESRP as Wetland 2-9). There were no BVW associated with this ditch or identified during a site visit in July 2017.





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Three vernal pools have been identified at Hanscom Field by MNHESP. These three vernal pools are located within the Town of Concord to the west of Runway 11-29. A fourth area with potential vernal pool characteristics occurs within the same vicinity as the three certified vernal pools in Concord. None of these vernal pools are located in close proximity to the development areas.

#### **4.3.10.3 Surface Waters and Watersheds**

Hanscom Field is located within the watershed drainage area of two perennial waterways: the Shawsheen River and Elm Brook. The Shawsheen River has a total drainage area of approximately 78 square miles, and encompasses approximately 12 Massachusetts municipalities, including Bedford where its headwaters originate. Representing one of the smaller watersheds in the state, the main stem of the Shawsheen River flows 25 miles from the east side of Hanscom Field, losing 70 feet in elevation as it travels to its confluence with the Merrimack River in Lawrence. The watershed supports a population of approximately 250,000 people. The Shawsheen River has a Draft Total Maximum Daily Load (“TMDL”) for Stormwater Pollutants (Shawsheen Headwaters 2003) published by MassDEP, inclusive of Hanscom Airfield and Hanscom AFB. There is also a Final TMDL for bacterial pathogens for the Shawsheen River for bacterial pollutants (Shawsheen River Basin 2002).

Elm Brook is a tributary of the Shawsheen River with a watershed of 5.8 square miles located in Lincoln, Concord and Bedford. The two waterbodies converge just northeast of the airport property. Neither of these resources is located within the Project Areas; however, stormwater runoff from Hanscom Field outfalls to Elm Brook and the Shawsheen River, after appropriate treatment has been applied. As noted above, a drainage ditch located on the North Airfield Area discharges to Elm Brook. Examination of the potential effects of such outfall on stream water quality was conducted and detailed in the 2012 ESPR. In conclusion, the surrounding land uses have a stronger effect on water quality than the activities at Hanscom Field.

#### **4.3.11 Secondary and Cumulative Impacts**

Past, present and recently foreseeable future actions at Hanscom include the following:

- ◆ In 2014 Rectrix completed construction of a new 60,000 square foot hangar and FBO facility that replaced the existing Hangar 24.
- ◆ In 2016 Jet Aviation began construction of a new replacement hangar and FBO facility by paving the access road and lots. Construction was completed in 2017.
- ◆ In 2016 Massport rehabilitated the Runway 23 safety area beyond the runway end and a portion of Taxiway Juliet, south of Taxiway Tango.
- ◆ In 2016 Massport rehabilitated sections of the landside roadways and rehabilitated T-hangars that were damaged during the winter of 2014-2015.

- ◆ In 2016, Massport added a bay to accommodate an Airport Rescue and Fire Fighting (ARFF) vehicle at its maintenance garage.
- ◆ In 2017 Boston MedFlight began construction activities to re-develop Hangar 12A.
- ◆ In 2017 Massport rehabilitated the pavement on Runway 11/29.
- ◆ In 2018 Massport expects to begin construction of a permanent new ARFF and United States Customs and Border Protection (USCBP) facility.
- ◆ Massport continues implementation of the airfield's Five-Year Vegetation Management Plan.
- ◆ Massport continues implementation of the airfield's Wildlife Hazard Management Plan, including upgrades to airfield fencing.

#### **4.3.12      *Not Affected***

For the following potential impact categories, some are not applicable to Hanscom Field due to its location, such as:

- ◆ **Coastal Resources-** Hanscom Field is not located in a Coastal Resource Area and would not be under the jurisdiction of the Massachusetts Office of Coastal Zone Management.
- ◆ **Farmlands-** there are no important farmlands such as pasturelands, croplands, or forests considered to be prime, unique, or statewide or locally important lands on Hanscom Field or affected by the project.
- ◆ **Floodplains-** the proposed redevelopment areas are not located within an area identified as a floodplain on a FEMA-developed Flood Insurance Rate Map (FIRM).
- ◆ **Wild and Scenic Rivers-** the Departments of the Interior and Agriculture manage the Wild and Scenic Rivers Act (Act) via the National Park Service (NPS). The NPS has designated sections of the Sudbury, Assabet and Concord Rivers as Wild and Scenic, including corridors that stretch for 29 miles along the Sudbury River, Concord River and Assabet River within the communities of Concord and Bedford. These river sections lie to the north and west of Hanscom Field, with the closest location to Hanscom being a portion of the Concord River just northwest of Route 62 approximately  $\frac{3}{4}$  of a mile away. None of the rivers receive surface water or stormwater runoff from Hanscom Field, thus, they would not be affected by the project.

Other potential impact categories are not applicable because of the nature of the proposed action, thus analysis is not required because the resource is not present within the Project Areas, or the no action, proposed action, and reasonable alternatives would not affect the impact category:

- ◆ **Compatible Land Use-** The proposed project has been included in the 2012 ESPR and identified for future aviation development. No changes or restrictions of use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft, need to be made.
- ◆ **Solid Waste-** the solid waste generated during project implementation, including construction waste, would be recycled and/or disposed of appropriately per Federal, state, and local regulations addressing such materials.

**Environmental Justice-** Environmental justice ensures no low-income or minority population bears a disproportionate burden of effects resulting from Federal actions. Environmental Justice populations are those segments of the population that the Executive Office of Energy and Environmental Affairs (EEA) has determined to be most at risk of being unaware of or unable to participate in environmental decision-making or to gain access to state environmental resources, or are especially vulnerable. They are defined as neighborhoods U.S. Census Bureau census block group data for minority criteria, and American Community Survey (ACS) data for state median income and English isolation criteria that meet one or more of the following criteria:

- 25 percent of households within the census block group have a median annual household income at or below 25 percent of the statewide median income for Massachusetts; or
- 25 percent or more of the residents are minority; or
- 25 percent or more of the residents have English Isolation

None of the communities surrounding Hanscom Field meet these criteria. The project would not cause disproportionate and adverse effects on low-income or minority populations.

- ◆ **Social Impacts-** The project would not require moving homes or businesses, would not divide or disrupt established communities, significantly change surface transportation patterns, disrupt orderly, planned development, or create a large change in employment. Section 5.9 discusses the Induced Socioeconomic consequences in detail.



## Section 5.0

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### Environmental Consequences

## 5.0 ENVIRONMENTAL CONSEQUENCES

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### 5.1 Environmental Consequences Evaluation Process

This section describes the environmental consequences of the Preferred and evaluated Alternatives. The project's potential environmental impact categories include the following:

- ◆ Air quality
- ◆ Biological Resources
- ◆ Department of Transportation Act, Section 4(f)
- ◆ Hazardous materials, solid waste, and pollution prevention
- ◆ Historical, architectural, archeological, and cultural resources
- ◆ Natural resources and energy supply
- ◆ Noise and compatible land use
- ◆ Socioeconomics, environmental justice, and children's environmental health and safety risks
- ◆ Visual effects
- ◆ Water resources (including wetlands, surface waters and groundwater)

### 5.2 Air Quality

#### *5.2.1 Proposed Action*

The Proposed Action consists of the redevelopment of two areas at Hanscom for aviation uses. The portion of the North Airfield Area proposed to be developed is approximately 2.5 acres. Massport will construct a new taxiway to access the sites. The second area is the Pine Hill Area of Hanscom and comprises approximately 1.4 acres of developable area. Development of the Pine Hill Area will require the replacement of several existing T-Hangars at a site in the North Airfield Area.

As discussed in Section 4.3.1, air pollutant emissions from aviation and motor vehicles at Hanscom comprise a very small fraction of the regional (county) emissions totals. Additionally, air quality has generally been improving over time, as shown in both the background concentrations over the past three years, as well as in Massachusetts Department of Environmental Protection's (MassDEP) Annual Air Quality Reports. Even with the increase in population and development, air quality has been improving, mainly due to emissions reductions as a result of improved technology, usage habits, and environmental awareness.

The Proposed Action can be evaluated in two phases: a construction phase and an operational phase.

#### **5.2.1.1 Construction**

The construction phase is expected to temporarily increase emissions from the exhaust of non-road construction equipment and the fugitive dust generated from earth moving activities. However, these emissions would be mitigated by the use of low emission construction equipment and the application of dust control measures. The project would require the use of contractors who adhere to Massport and DEP Clean Air Construction Initiative/EPA's voluntary Diesel Retrofit Program, which requires contractors to use either EPA rated Tier 4 heavy equipment or equipment that has been retrofitted with pollution control devices to meet Tier 4 emissions standards. As part of the Hanscom Environmental Management System (EMS), contractors are required to retrofit their heavy equipment with advanced pollution control devices during construction of all Massport projects. Contractor owned equipment such as front-end loaders, backhoes, cranes and excavators will be retrofitted with oxidation catalysts and low particulate filters. These devices filter out and break down harmful diesel emissions of hydrocarbons, particulate matters and carbon dioxide. Also, the Massachusetts Anti-Idling law would require equipment to remain idling for no longer than five minutes unless in active operation.

Emissions of fugitive dust are generated while disturbing dry soil, from either equipment movement, or excavating, stockpiling, or transporting soil. Soil "track out" on vehicle can also produce dust emissions. Dust from erosion during dry and windy periods can also be problematic. However, fugitive dust emissions can be adequately mitigated through the use of vehicle wash stations, water application or covering of exposed soil, or seeding/mulching for long term control.

Through the use of these mitigation measures, it would be expected that any impacts as a result of construction activities are minimized and temporary, are not significant, and that no NAAQS are exceeded.

#### **5.2.1.2 Aircraft Operations**

Future development of the North Airfield Area was analyzed in the 2012 ESPR and planned redevelopment of the Pine Hill Area remains unchanged from the 2005 ESPR analysis. The air quality analysis presented in the 2012 ESPR assumed operational changes as a result of the Proposed Action and evaluated a level of future operations above that expected for the Proposed Action. Accordingly, the 2012 ESPR analyses of future conditions (2020 and 2030), fully analyzed the potential effects of the proposed improvements addressed in this EA. These identified impacts are considered to be less than significant.

Construction of additional hangars are also not expected to significantly increase groundside vehicle traffic as the Proposed Action is primarily designed to meet existing demand. Although the hangars would likely have a number of employee commuter trips, their numbers would be small with respect to the general regional traffic. Generally, hangar use does not generate increased traffic and does not typically coincide with traditional daily peak travel times. Section 6.0 of the 2012 ESPR presented a detailed analysis of current and projected future vehicular traffic volumes; that analysis demonstrated that during peak travel hours, Hanscom traffic represents less than 5% of roadway traffic at key intersections. The 2012 ESPR evaluated increases in traffic beyond that expected for the Proposed Action. Emissions from on-road vehicles would not be expected to change significantly, and subsequently, there would be little to no change expected in ambient pollutant concentrations.

### **5.2.2        *No Action Alternative***

The “no action” alternative consists of leaving the existing areas as is. Thus, no construction would occur, and both aircraft operations and groundside activities would be unaffected.

#### **5.2.2.1        Construction**

Since no construction would occur, no adverse air quality impacts from construction activities would be produced.

#### **5.2.2.2        Operations**

It would be expected that operations would continue as currently trending. Aircraft operations would maintain their existing levels and forecast growth. Groundside activity would also remain unchanged. Reduction of ferrying may not occur. Air quality impacts from operations would be unaffected.

### **5.2.3        *Conformity***

Section 176 (c) of the Clean Air Act (CAA) requires that any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity must demonstrate that the action conforms to the area’s commitment to eliminate or reduce the severity and number of violations of the NAAQS and achieve expeditious attainment of those standards.

General Conformity ensures that the actions taken by federal agencies do not interfere with a state’s plans to attain and maintain national standards for air quality and applies to all other actions in non-attainment or maintenance areas not specifically covered by transportation conformity (highway and transit projects). To determine whether general conformity requirements apply to an action, the agency in charge must consider the nonattainment and maintenance status of the area, the exemptions from and presumptions to conformity, the



project's emissions, and the regional significance of the project's emissions. The conformity rule applies to actions located in nonattainment and maintenance areas. Since the project is located in an area of attainment for all pollutants, General Conformity does not apply.

### 5.3 Biological Resources

Since a majority of both development areas has been previously developed/altered, the Proposed Action will have only minor impacts to biotic resources. Approximately 9.75 acres of currently vegetated areas would be converted from vegetated (permeable) to paved (impermeable) for the hangar, taxi lane, and parking areas. This additional impervious area will be offset by the removal of existing impervious elsewhere on the airfield, converting those areas back to a mowed grass habitat. Existing impervious areas on site total four acres. These actions are expected to result in minimal impacts on the wildlife that currently use these areas. No significant stands of trees will be removed and the large areas of upland forest adjacent to the project areas will remain following the project available for use by wildlife.

No wetlands or associated state wetland buffer zones would be disturbed; they will continue to provide their respective functions at the airport. The Proposed Action would not result in any impacts to the waterbodies proximate to the development areas, and therefore, no impacts to fisheries are expected.

Development alternatives that were evaluated for both development areas had greater impacts to vegetated areas and increases in impervious surface. The Proposed Action minimizes impacts to forested upland areas and wetlands as discussed in Section 5.11.2. The no action alternative would not meet the project purpose of meeting current demand and need in providing additional hangar and apron space.

#### **5.3.1 *Federal and State-Listed Endangered and Threatened Species***

There will be no impacts to the federally-listed NLEB due to lack of tree removal required by this project as well as lack of nearby hibernacula or maternal roost trees. The state-listed upland sandpiper and grasshopper sparrow would not be impacted by the Proposed Action. While a small portion of Priority Habitat polygon overlaps the Pine Hill Area existing hangars and project site, this area consists of buildings and paved surfaces; there is no actual habitat present. While grassland bird species are located in the grassy airfields areas, hangar development in the North Airfield Area would be situated across a taxiway from an infield where grasshopper sparrows have been observed in the past. Since the nesting activity has occurred under the existing and higher historic activity levels at the airport, the General Aviation hangar development in this location would be expected to have no effect on the continued usage of the infield as a nesting site. There would be no net loss of habitat for either species since no areas of airfield grassland will be altered.

State listed turtle species are located in brooks and streams and occur in adjacent uplands. These species are primarily associated with Elm Brook and the Shawsheen River on Hanscom which occur on the western and northern part of the airport and flow north. The closest area at the North Airfield Area is approximately 1,000 feet from Elm Brook at its closest point.

#### **5.4 Section 4(f)**

As discussed in Section 4.3.3, Section 4(f) relates to historic sites, properties and parks, recreation areas, and wildlife and waterfowl refuges. The Massachusetts Historical Commission (MHC) is the entity that functions as the SHPO for Massachusetts. Although the entirety of Hanscom Field is surrounded by several listed 4(f) sites, including Great Meadows National Wildlife Refuge and the Minute Man National Historical Park (MMNHP), as detailed fully in Chapter 10 of the 2012 ESPR, none of these sites are within the Proposed Action site boundaries (See Figure 4-2). The closest property, the MIT Hangar – Hangar 24, is approximately 509 feet from the Pine Hill ramp area. Other sites, such as the Elm Brook Farm, Henry David Thoreau Birthplace, and Hanscom Field – Hangar 17, are approximately 0.24 miles, 0.52 miles, and 0.46 miles from the Pine Hill ramp area, respectively. The Chip-In Farm, Chip-In Farm Barn, Chip-In Farm Chicken Barn, and Chip-In Farm General Store and Office properties are approximately 0.35 miles from the T-Hanger and the North Airfield Area. The John McGovern House is approximately 0.53 miles from the T-Hanger and the North Airfield Area.

The Minute Man National Historic Park is a Section 4(f) property located outside of the project area and adjacent to Hanscom Field. See Section 5.6 for the discussion on potential effects on historic properties. Development alternatives evaluated would similarly have no impact on Section 4(f) resources. The no action alternative would not meet the project purpose of meeting current demand and need in providing additional hangar and apron space.

#### **5.5 Hazardous Materials**

The Proposed Action is not anticipated to result in the release of hazardous materials and is not anticipated to generate hazardous waste. Waste disposal during project construction will be managed separately from normal airport solid waste management operations, and will not generate solid waste during post-construction period, i.e. long-term. Any contaminated soils encountered during construction will be managed pursuant to the Utility-related Abatement Measure (URAM) provisions of the Massachusetts Contingency Plan. There is not any work proposed within any of the Operating Unit (OU) boundaries associated with the Superfund sites. Massport's response to any contamination found during construction will comply with the Massachusetts Contingency Plan at 310 CMR 40.0000.

If hazardous materials such as asbestos or lead are encountered during demolition of the existing hangars, any such materials would be removed at the time of demolition. Best Management Practices (BMPs) would be implemented in accordance with local, state and federal regulations to ensure compliance.

## 5.6 Historic and Archaeological Resources

According to the 2012 ESPR, no known Historic or Archaeological resources are located within the immediate project area (as shown on Figure 4-2). Direct impacts to such resources would not occur as a result of the Proposed Action, nor any development alternatives evaluated. The 2012 ESPR assessed development scenarios including the hangar development. It notes that the North Airfield Area is within an area assessed as having low archeological sensitivity. MHC, the Historical Commissions of the four Hanscom Field towns affected by activities at Hanscom Field (Lincoln, Concord, Bedford and Lexington) will be contacted and given opportunity to review the Draft EA and provide comment. The National Park Service will also be contacted and given opportunity to review the Draft EA as part of the public comment period.

As discussed in Section 4.3.7, comparison of year 2012 Day-Night Sound Levels (DNL) noise contours prepared for the 2012 ESPR to the contours shown in the 2005 ESPR show that overall noise levels at Hanscom Field have decreased. The Proposed Action is not expected to result in a significant change in operations or noise impacts.

The no action alternative would not meet the project purpose of meeting current demand and need in providing additional hangar and apron space.

## 5.7 Energy Supply, Natural Resources and Sustainable Development

Massport strives to minimize the impact of the airport's operations on surrounding communities. Massport is diligent in abiding by all environmental regulations and is a leader in promoting voluntary environmental initiatives. The airport is committed to implementing programs aimed at sustainable development relative to energy usage and natural resources. The proposed hangars will be designed and constructed in accordance with LEED Silver certification standards, at a minimum. Construction contractors would be chosen who can adhere to these standards. Project initiatives for reducing construction impacts may include: using low emitting materials for construction including paint and flooring; using renewable energy sources for construction activities; using recycled materials for building construction; and implementing a recycling program for used or remnant construction materials.

The Proposed Action would not significantly affect energy supply or natural resources, and would work towards the sustainable development goals identified by Massport. Development alternatives evaluated also would not have any significant effects as the alternatives would be required to meet the same standards and guidelines noted as follows. As identified in Massport's *Sustainable Design Standards and Guidelines*, Massport has several programs and initiatives in place that contribute to the sustainable operation and maintenance of Hanscom Field and its facilities. The Proposed Action will be designed in accordance with these programs and initiatives, including:

- ◆ Implementation of a comprehensive solid waste and recycling program;

- ◆ Development of an Energy Master Plan;
- ◆ Development and documentation of greenhouse gas and emissions inventories;
- ◆ Development and implementation of a green cleaning program; and
- ◆ Examining the potential for installation of energy-reducing and renewable power systems such as wind turbines or solar panels.

The no action alternative would not meet the project purpose of meeting current demand and need in providing additional hangar and apron space.

## 5.8 Noise

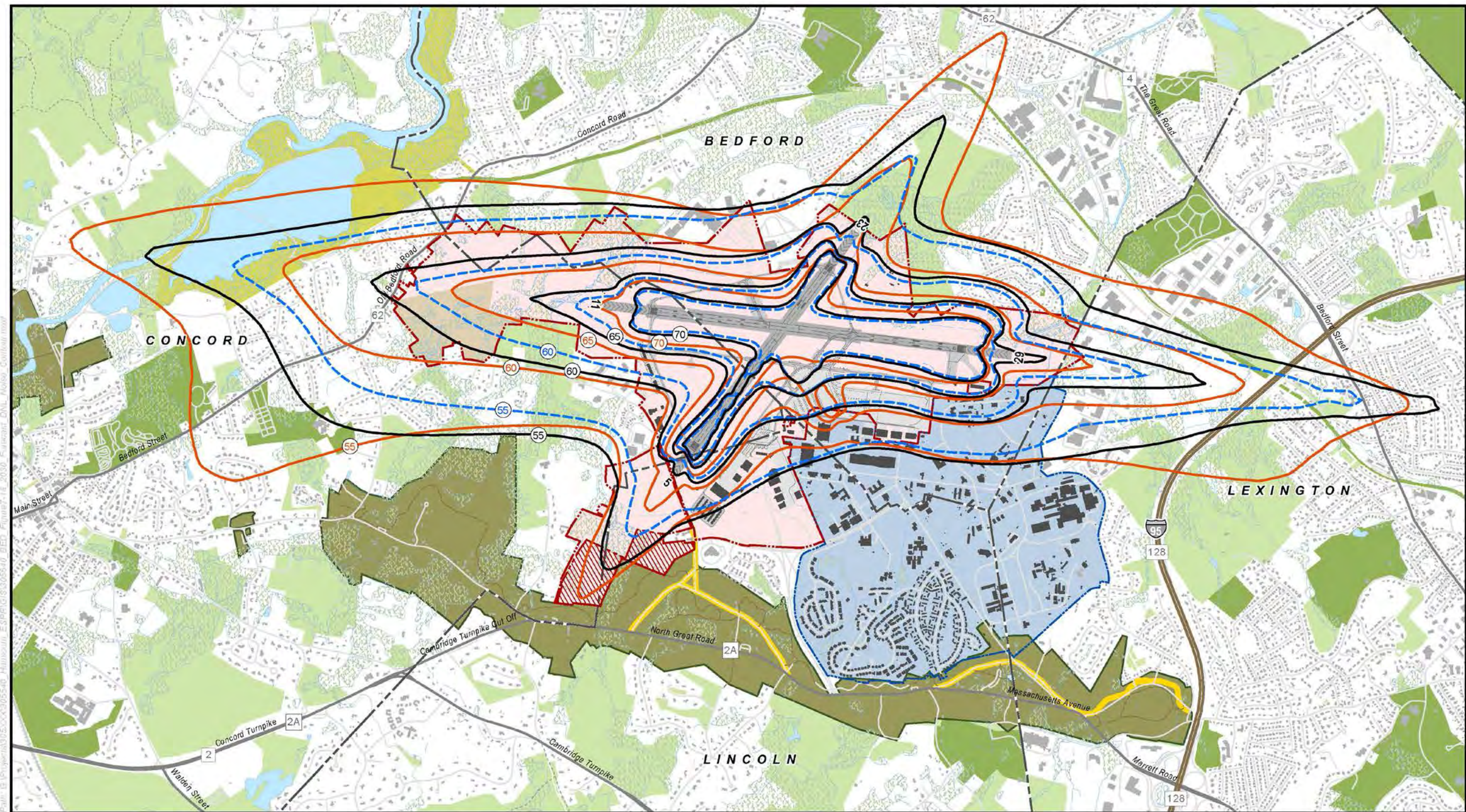
For noise analysis of airport actions, FAA Order 1050.1F CHG 1 requires identification of the number of people newly exposed to noise levels greater than Day-Night Sound Levels (DNL) 65 dB, as well as any areas projected to experience an increase in long-term noise level of 1.5 dB or more (within DNL 65).

As noted in Section 1.0, the 2012 ESPR forms the basis of evaluation for a range of operating and environmental impacts associated with various projected future projects and activity levels. In this manner, when new projects are predicted to add any new aircraft operations, to the extent that level and type of activity is consistent with operating scenarios evaluated in the 2012 ESPR, the project is considered to be consistent with the these findings.

For the Proposed Action, a comparison of year 2012 DNL noise contours developed for the 2012 ESPR was made to the contours shown in the 2005 ESPR. That comparison showed that overall noise levels at Hanscom Field have decreased, largely due to zero operations by civilian Stage 2 jets, aircraft technology and decreases in total operations. 2012 ESPR future population estimates within the 65 and 55 DNL contours for the 2020 and 2030 scenarios indicate that even with the projected growth in operations for 2020 and 2030 (independent of this project), there will be no residents within the 65 dB contour and populations exposed to both the 65 dB and 55 dB contour will remain below 2005 actual levels. Activity levels associated with the Proposed Action are well within the levels assessed in Section 7.6 of the 2012 ESPR.

In addition, the 2012 ESPR analyses shows that even with forecasted increases in operations or other activities, no noise analysis locations (including historic sites and MMNHP) would experience a DNL value greater than 60 dB under any future scenario. The Deacon John Wheeler/Capt. Jonas Minot Farmhouse and the Wheeler-Merriam House are the only historic sites that would experience potential noise levels between 55 and 60 dBA in the 2020 and 2030 scenarios. No portion of the MMNHP is located in the 55 DNL contour in the 2012 ESPR including the future forecasts for 2020. Only a small portion of the MMNHP would be within the 55 DNL contour in 2030 (see Figure 5-1).







Noise impacts related to the Proposed Action will include sounds typical of the operation of runways, taxiways and aprons, including aircraft and motor vehicle engine noise. No increases in operations or aircraft type are anticipated to result from the proposed actions, nor alternative development scenarios evaluated since the sizing of hangar space is similar. Construction noise will be temporary and generated by construction vehicles and construction equipment performing earth work, paving and delivering construction materials.

The no action alternative would not meet the project purpose of meeting current demand and need in providing additional hangar and apron space.

Project construction is planned to begin in 2018. Prior to construction, a Construction-Period Traffic Management Plan will be developed that will include general project information and details related to work hours, delivery and construction truck routes, worker access and parking plans, police details, truck unloading and staging, construction site signs, modes of transportation for construction workers, and initiatives for reducing driving and parking demands. The plan will also highlight the protection of utilities and the control of noise and dust. This plan, including the construction vehicle routes and anticipated hours, will be published and available prior to construction. The plan will be reviewed by the Hanscom Field Advisory Commission prior to construction.

Measures to mitigate construction noise are anticipated to include:

- ◆ Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- ◆ Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- ◆ Replacing specific construction operations and techniques by less noisy ones where feasible;
- ◆ Selecting the quietest alternative items of equipment where feasible;
- ◆ Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- ◆ Ensuring construction vehicle operators abide by the Massachusetts 5-Minute Idle Law by turning off idling equipment;
- ◆ Locating noisy equipment at locations that protect sensitive locations by shielding or distance;

- ◆ Requiring all construction equipment to be equipped with exhaust mufflers, and requiring mufflers to be maintained to minimize engine noise; and;
- ◆ Scheduling construction to generally occur during daylight hours

## 5.9 Induced Socioeconomic

The Proposed Action would result in positive induced socioeconomic impacts and would allow Hanscom Field to better serve the overall air demand of eastern Massachusetts, particularly that for corporate business aircraft. FBOs have existing customers on waiting lists. The new hangar space will meet existing demand. The increase in hangar space would allow FBOs to hire additional employees, thus increasing jobs at Hanscom. The Proposed Action would result in direct positive effects to those who would have new jobs, as well as indirect or secondary positive effects (increases) in local services such as restaurants, gas stations, etc. within Hanscom and local areas. As the development alternatives evaluated met the same goals of providing increased hangar space, positive impacts would also result.

The no action alternative would not meet the project purpose of meeting current demand and need in providing additional hangar and apron space and would not provide any increased economic return.

## 5.10 Visual Effects

The project would not increase off-airport light emissions or create visual effects. The characteristics of most airport lighting systems create potential sources of annoyance to nearby residents, such as visual navigational aids, edge lights, and others, which may emanate disturbing emissions. There will be no net increase of such lighting emissions. Lights around the Pine Hill ramp area would be repositioned as needed but would not increase significantly in number. Lights at the North Airfield Area access roads would be required to be visible to drivers accessing the new hangars from Hartwell Road.

Building lighting and parking lot areas would comply with the lighting specifications in Massport's *Sustainable Design Standards and Guidelines*, as well as the *Guide to Tenant Construction*, so as to not increase light emissions significantly. Final design has not been completed, however, LED lighting fixtures or compact fluorescent light bulbs will be utilized where feasible. All lights would be directional to send light down to the surface to eliminate bleeding of light offsite. EnergyStar equipment would be used where feasible. Advanced lighting technologies would be implemented where practicable, and lighting systems, as a part of the entire energy use system, would be periodically reviewed for potential energy-reducing improvements. Existing and proposed roof perimeter and parapet lights would be shielded and directed down and would not spill far from the source. Roadway lighting and parking lot lights would consist of amber security lighting or older low-profile street lights (lower intensity white light). This lighting, similar to building light, is directed downward and does not typically spill more than 30-50 feet away from the light source.

Construction vehicles must have proper identification according to a Construction Safety and Phasing Plan. While not anticipated for this project, any vehicle operating in the movement area during hours of darkness or reduced visibility must be equipped with a flashing amber dome-type light. These flashing lights would be temporary and utilized only during periods of construction activity within airport property. Proposed construction activities are expected to be conducted almost exclusively in daylight hours.

## 5.11 Water Resources

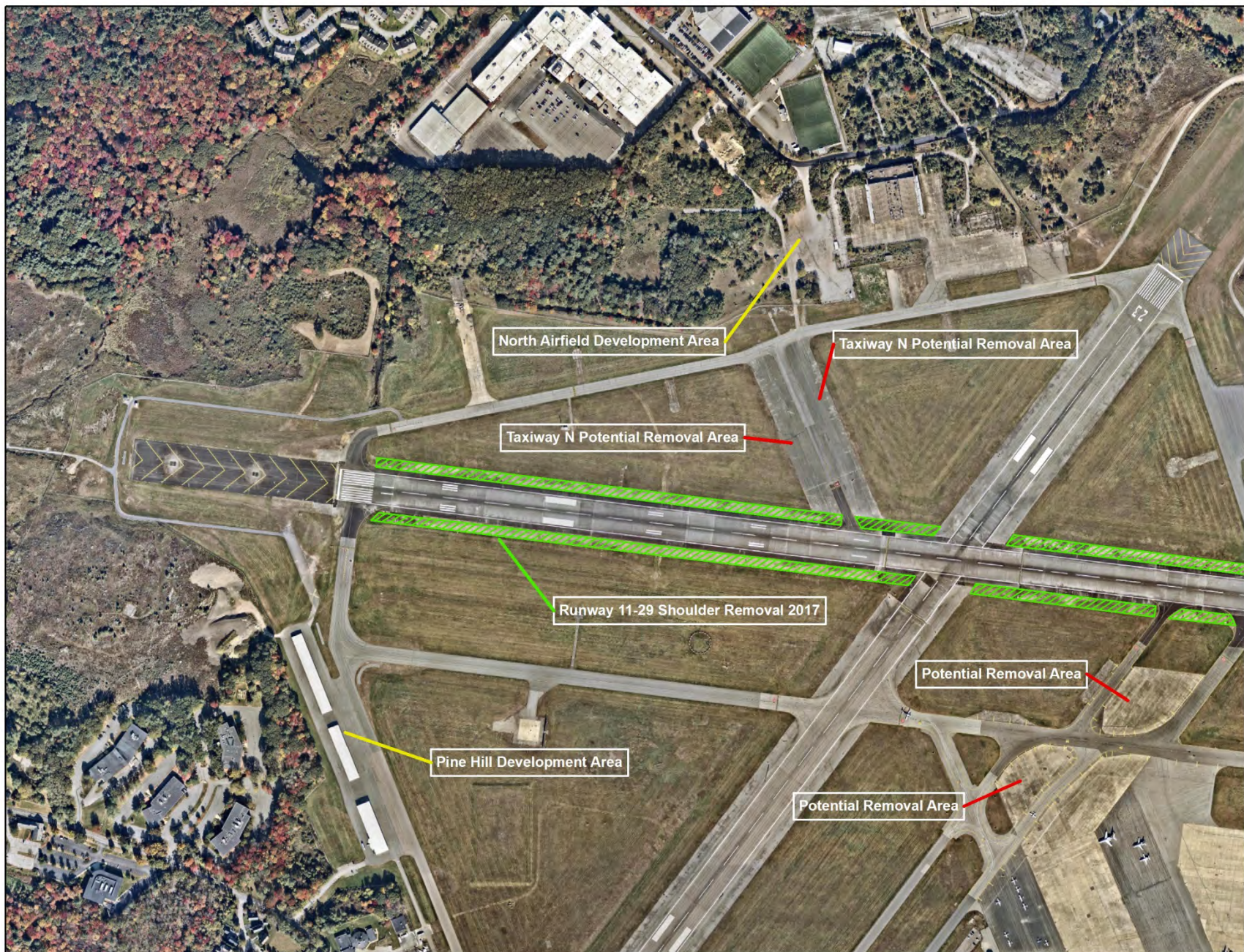
### 5.11.1 *Groundwater*

The Proposed Action would not impact water quality at Hanscom Field. The potential to impact water quality stems from three sources: 1) ground disturbance due to sedimentation caused by erosive forces, 2) increases to impervious surface area, and 3) increases in potential spills of fuel or other contaminants. The first potential source will be mitigated by best management practices such as erosion control, implementation of a stormwater pollution prevention plan (SWPPP), and soil stabilization using native seeding or other approved means. The extent of soil disturbance will be limited during construction. A SWPPP will be implemented to minimize impacts to water quality during construction. The program will incorporate Best Management Practices (BMPs) specified in guidelines developed by the EPA and will include a project description, construction schedule and sequence, required erosion and sedimentation control, soil stabilization, documentation regarding inspections and maintenance, and a spill prevention plan. The construction contractor will be responsible for implementing and maintaining all erosion and sedimentation control measures.

Secondly, Massport directs new development to areas with existing impervious surfaces and to take advantage of existing infrastructure wherever possible. The Proposed Action will minimize the surface area of new impervious pavement and re-using areas of existing impervious pavement to the extent practicable at both sites. Where new impervious surface will be added at these two sites, impervious surface has or will be removed at a site elsewhere on the airfield for a no net gain in impervious surface within the Shawsheen River watershed. As noted earlier, in anticipation of this redevelopment, Massport removed approximately ten acres of excess pavement adjacent to Runway 11/29 during the summer of 2017 (see Figure 5-2). Together with any additional pavement to be removed, with this project in place there would be a net reduction in airfield paved surfaces. Alternatives evaluated for both development areas would have a greater increase impervious surfaces. The no action alternative would not increase impervious surfaces; however it would not meet the project purpose of meeting current demand and need in providing additional hangar and apron space.

Massport requires individual projects to implement BMPs to address Massport's policy regarding stormwater runoff requirements that projects resulting in increases in impervious surfaces do not increase peak runoff rates. The Proposed Action would comply with the







Stormwater Management Standards. Massport also requires all development and facility operations, to conform to the requirements of the 2015 NPDES permit for Hanscom Field. All activities would be required to meet applicable standards for stormwater management required for site development or redevelopment by MassDEP. The stormwater treatment system designed for this project will meet these standards.

Thirdly, the relocation of the T-hangars to the North Airfield Area would include stormwater management facilities designed to protect the recharge areas of public water supply resources. Massport would require potential developers of the GA/corporate hangar sites in the North Airfield Area to ensure that any potential facilities are designed to protect the recharge area of the Bedford public wells. These measures, as well as inclusion of required elements of Massport's spill prevention program, will protect the recharge area. Future tenants will be required to implement a comprehensive Spill Management Program within their lease areas. Components of this program could include design of a state-of-the-art spill containment system for the new hangar, close monitoring of fuel spillage, and tracking the status of spill response actions and compliance with the Massachusetts Contingency Plan (MCP). State environmental regulations require the responsible party to report all 10-gallon or larger petroleum spills to MassDEP.

#### **5.11.2      *Surface Water and Wetlands***

The Proposed Action poses no direct impacts to wetlands. The proposed alternatives for both sites avoid direct impacts to wetlands altogether as well as work within the 100-foot Buffer Zone to Bordering Vegetated Wetland (BVW). Alternatives that were evaluated and dismissed for both sites had direct impacts to vegetated wetlands and waterways. As detailed above in Section 5.11.1, all stormwater runoff will be treated in accordance with MassDEP Stormwater Management Standards and there will be no net gain in impervious surface within the watershed.

### **5.12    Secondary and Cumulative Impact Analysis**

The Proposed Action is not expected to result in any significant secondary or cumulative impacts.

#### **5.12.1      *Secondary Impacts***

Guidelines prepared by CEQ, for implementing NEPA, define secondary or indirect effects as those that are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable." Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. (40 CFR 1508.8).

The Proposed Action is not expected to cause significant secondary impacts in any of the impact categories that have been considered, aside from a positive socioeconomic impact

resulting from both construction and permanent job creation. All impacts are expected to occur only at the specific locations where construction will occur. The potential for secondary impacts occurring later on or distant from the site due to on-going operations at the hangars will be minimized by the mitigation measures described herein, such as Massport's commitment to sustainable design principals, proper stormwater management, impervious surface offsets, noise monitoring, other noise control programs, and light emissions control. The Proposed Action is not expected to create significant secondary air quality or noise impacts as it is not expected to significantly affect the amount of air traffic and in fact may help to lower operations at the field as discussed in Sections 2.2 and 4.2.

#### ***5.12.2 Cumulative Impacts***

Cumulative effects may result from individually minor but collectively significant actions that take place over a period of time. Mitigation for previous improvements or modifications to the ALP reduces the effect of cumulative impacts. Due to the proposed location of the project construction which is outside wetlands and their associated buffer zone, rare species habitat, cultural resource sensitive areas, and Environmental Justice populations, the Proposed Action is not expected to have any significant cumulative impacts in those categories. Further, the project is not expected to have any significant impact on aviation operations in terms of overall numbers of landings and take-offs, therefore it is not expected to have any significant impact on air, noise or 4(f) resources. The Proposed Action will not add cumulatively to noise, air quality or traffic impacts beyond those already studied in the 2012 ESPR.

## Section 6.0

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### Mitigation



## 6.0 MITIGATION

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This EA demonstrates that although the project will result in some unavoidable impacts, those impacts have been minimized to the greatest extent practicable, and can be adequately mitigated. Potential project-related impacts have been mitigated to the maximum extent practicable, such that project implementation will have no long-term effects to natural resources, or airport facilities and operations. Where a reduction in aircraft ferrying is achieved, the project can have a positive environmental impact. The following table, Table 6-1, describes, by resource category, the impacts anticipated and associated mitigation measures.

## Section 6.0

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### Mitigation

**Table 6-1 Summary of Impacts and Mitigation Measures**

| Subject Matter  | Impact   | Mitigation Measure  | Schedule                             |
|---|--|---|--------------------------------------|
| <b>Air Quality</b>  | No impacts are anticipated   | <p>The following actions are expected to have minor benefits to air quality:</p> <ul style="list-style-type: none"> <li>◆ Larger hangars will enable FBOs to reduce ferrying operations. There is not anticipated to be an increase in operations based on current trends.</li> <li>◆ Additional hangar space will allow FBOs to accept newer, more efficient aircraft.</li> <li>◆ See below for construction period impacts</li> </ul>   | During and Post-construction         |
| <b>Noise</b>  | No impact to noise contours is anticipated                         | Overall noise levels at Hanscom Field have decreased, largely due to zero operations by civilian Stage 2 jets, aircraft technology and decreases in total operations; and the Proposed Action will not change this trend.   | N/A                                  |
| <b>Water Quality</b>  | No impacts are anticipated, NPDES permit required for construction | <p>Stormwater Pollution Prevention Plan (SWPPP) would be generated for construction-related activities. During construction, structural and non-structural controls to minimize erosion and sedimentation, including temporary stabilization, temporary seeding, permanent seeding, dust control, temporary sediment basins and check dams, diversion swales, catch basin inlet protection, and dewatering filters.</p> <p>During operation, consistency with MassDEP's Stormwater Regulations and Massport's stormwater policy through measures including infiltration, peak runoff rate and volume control, and total suspended solids removal. Combined with airfield pavement removed in the summer of 2017 and any additional pavement to be removed as part of this project, there will be no net gain in impervious surface on the airfield.</p> | During and post-construction         |
| <b>Surface Water and Wetlands</b>                                   | Wetland impacts are avoided  | Best management practices described above for resource protection surfaces. These controls would be inspected daily and after rainfall events, and maintained periodically, as required, until such time that their removal is approved by all pertinent regulatory agencies.   | During and post-construction         |
| <b>Energy Supply, Natural Resources and Sustainable Development</b> | Minor increase in use of energy resources.                         | Massport is committed to implementing programs aimed at sustainable development relative to energy usage and natural resources  | Design, During and post-construction |

**Table 6-1 Summary of Impacts and Mitigation Measures (Continued)**

| <b>Subject Matter</b>      | <b>Impact</b>   | <b>Mitigation Measure</b>   | <b>Schedule</b>                  |
|----------------------------|---|---|----------------------------------|
| <b>Hazardous Materials</b> | No known measures   | If any hazardous materials encountered during demolition of Hangars at the Pine Hill Area would be removed or will be managed pursuant to the Utility-related Abatement Measure (URAM) provisions of the Massachusetts Contingency Plan and removed or managed in place in accordance with Massport Sustainable Design Standards and Guidelines as well as the Guide to Tenant Construction (2009) at the time of demolition. BMPs would be implemented in accordance with local, state and federal regulations to ensure compliance.   | Prior to and during construction |
| <b>Wetlands</b>            | Wetland impacts are avoided; No Wetland or buffer zone alteration<br><br>New impervious surface: 9.75 acres | Project was designed to avoid impacts to wetland resource areas. Wetland resource areas will be protected from direct impacts, including erosion and sedimentation, during construction.<br><br>Combined with airfield pavement removed in the summer of 2017 and any additional pavement to be removed as part of this project, there will be no net gain in impervious surface on the airfield.   | Prior to and during construction |
| <b>Construction</b>        | Temporary impacts on traffic, air quality, noise, water quality   | Implementation of measures to avoid or minimize environmental impacts during project construction, including: <ul style="list-style-type: none"> <li>◆ Compliance with the SWPPP;</li> <li>◆ Implementation of MassDEP and EPA Best Management Practices;</li> <li>◆ Equipment maintenance to minimize noise;</li> <li>◆ Low sulfur or ultra-low sulfur diesel fuel use by contractors;</li> <li>◆ Designated truck routing;</li> <li>◆ Limit truck idling;</li> <li>◆ Site housekeeping, such as water use for dust suppression, and interim stabilization of surfaces not being worked;</li> <li>◆ Flashing lights on construction vehicles used only when on airport property; and</li> <li>◆ Recycling and waste reclamation where possible.</li> </ul> | During construction              |



**Table 6-1      Summary of Impacts and Mitigation Measures (Continued)**

| <b>Subject Matter</b>                     | <b>Impact</b>  | <b>Mitigation Measure</b>   | <b>Schedule</b>                      |
|---|--|---|--------------------------------------|
| <b>Light Emissions and Visual Effects</b> | Minor increase in light emissions                        | New light emission impacts would be minimized via design details as specified in the Massport Sustainable Design Standards and Guidelines. All lighting would be designed with reduced energy use in mind with LED lighting utilized for signage and signals. .   | Design, During and post-construction |
| <b>Wildlife Habitat</b>                   | No impact  | Avoidance of airfield grassland habitat.  | During construction                  |
| <b>Stormwater</b>                         | 9.75 acres of new impervious area in redevelopment sites | <p>Combined with airfield pavement removed in the summer of 2017 and additional pavement to be removed as part of this project, there will be no net gain in impervious surface on the airfield.</p> <p>During construction, structural and non-structural controls to minimize erosion and sedimentation, including temporary stabilization, temporary seeding, permanent seeding, dust control, temporary sediment basins and check dams, diversion swales, catch basin inlet protection, and dewatering filters.</p> <p>During operation, consistency with MassDEP's Stormwater Regulations and Massport's stormwater policy through measures including infiltration, peak runoff rate and volume control, and total suspended solids removal.</p> | During construction                  |

## Section 7.0

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### List of Agencies Contacted, Persons Consulted, EA Preparers, and Distribution List

## 7.0 LIST OF AGENCIES CONTACTED, PERSONS CONSULTED, EA PREPARERS, AND DISTRIBUTION LIST

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## Section 8.0

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### References

## 8.0 REFERENCES

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## Section 9.0

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### List of Acronyms

## 9.0 LIST OF ACRONYMS

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|          |  |
|----------|--|
| AFB      | Air Force Base   |
| ALP      | Airport Layout Plan  |
| BED      | Hanscom Field  |
| BVW      | Bordering Vegetated Wetland  |
| CatEx    | Categorical Exclusion  |
| CAA      | Clean Air Act  |
| CERCLA   | Comprehensive Environmental Response, Compensation and Liability Act |
| CGP      | Construction General Permit  |
| CEQ      | Council on Environmental Quality                                     |
| DNL      | Day-Night Sound Levels   |
| Mass DEP | Massachusetts Department of Environmental Protection                 |
| Mass DOT | Massachusetts Department of Transportation                           |
| EA       | Environmental Assessment   |
| EIS      | Environmental Impact Statement                                       |
| EMS      | Environmental Management System                                      |
| EPA      | Environmental Protection Agency                                      |
| ESPR     | Environmental Status and Planning Report                             |
| FAA      | Federal Aviation Administration                                      |
| FBO      | Fixed Base Operator  |
| GA       | General Aviation   |
| HFAC     | Hanscom Field Advisory Commission                                    |
| HATS     | Hanscom Area towns Committee   |
| IRP      | Installation Restoration Program                                     |
| LUW      | Land Under Water   |
| LEED     | Leadership in Energy and Environmental Design                        |
| MCP      | Massachusetts Contingency Plan                                       |
| MACRIS   | Massachusetts Cultural Resource Information System                   |
| MAAQS    | Massachusetts Ambient Air Quality Standards                          |

|          |  |
|----------|--|
| MEPA     | Massachusetts Environmental Policy Act                           |
| MHC      | Massachusetts Historical Commission                              |
| MNHESP   | Massachusetts Natural Heritage and Endangered Species Program    |
| Massport | Massachusetts Port Authority                                     |
| NAAQS    | National and State Ambient Air Quality Standards                 |
| NEPA     | National Environmental Policy Act                                |
| NCP      | National Oil and Hazardous Substances Pollution Contingency Plan |
| NPS      | National Park Service  |
| NPDES    | National Pollutant Discharge Elimination System                  |
| NWIRP    | Naval Weapons Industrial Reserve Plant                           |
| NLEB     | Northern Long-eared Bat  |
| NOI      | Notice of Intent   |
| OU       | Operating Unit   |
| PM       | Particulate Matter   |
| RAO      | Response Action Outcome  |
| RFQ      | Request for Qualifications                                       |
| SHPO     | State Historic Preservation Officer                              |
| SIP      | State Implementation Plan  |
| SWPPP    | Stormwater Pollution Prevention Plan                             |
| USAF     | United State Air Force   |
| USCBP    | United States Customs and Border Protection                      |
| USFWS    | United States Fish and Wildlife Service                          |
| USACE    | US Army Corps of Engineers                                       |
| USGBC    | U.S. Green Building Council                                      |
| VOC      | Volatile Organic Compounds                                       |
| WPA      | Wetlands Protection Act  |

## Attachment A

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### Site Photographs





Photo 1: View of the mowed grass area at Pine Hill Area just west of the hangars.



Photo 2: View of access to Virginia Road at Pine Hill Area





Photo 3: View of an existing t-hangars building at Pine Hill Area.



Photo 4: Existing apron space at Pine Hill Area.





Photo 5: Existing paved and grassed areas at the North Airfield Area looking west.



Photo 6: Existing paved areas at the North Airfield Area looking east.